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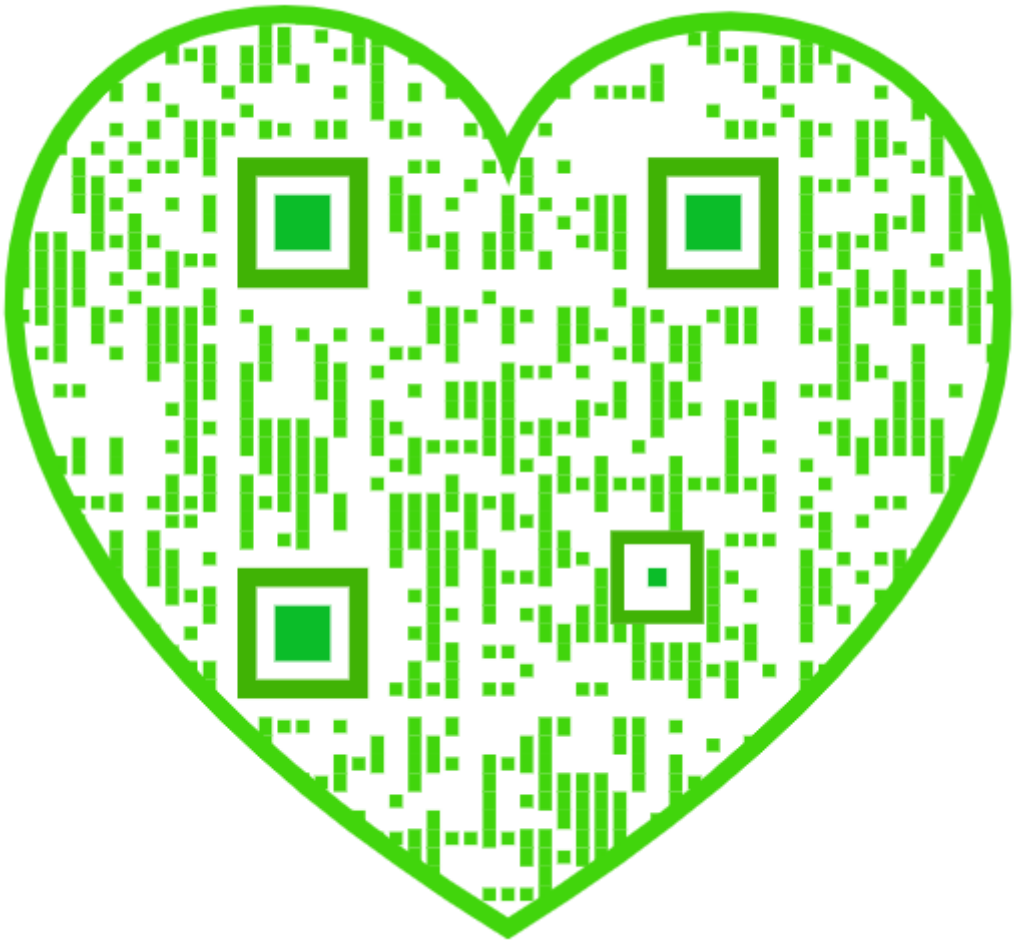

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THE EDITOR'S ANGLE

The proud dads *from left*: Assistant Art Director Perry McFarlin and Kelsey, How-To Editor Marlen Kemmet with Slade, Copy/Production Editor John Hofheimer with Julia, and Products/Techniques Editor Bill Krier with Rachel.

Print this article

Better Homes and Gardens
Decorative
WOODCRAFTS
16-page pattern packet inside
Savvy shopper's guide to acrylic brushes
Celebrate the months with our heartwarming wreath
Visit our product marketplace
12 TERRIFIC PROJECTS YOU CAN MAKE

Meet some exciting new additions to the *WOOD*® magazine family

All of a sudden, we seem to be having a baby boom around here. Maybe it's something in the air . . . sawdust perhaps. Whatever it is, there sure are a lot of new faces showing up at the *WOOD* magazine offices lately.

I was going to ask you readers to vote on the best-looking offspring, but I decided it would be a lot safer just to show a photo of all the proud papas and their most recent "projects." (Sorry, no patterns available.) Pretty good-looking group, don't you think?

Speaking of additions...

Guess what? We're growing again. We've just launched a new six-times-a-year magazine called *Decorative Woodcrafts*®. This one's for woodworking craft enthusiasts who enjoy painting or decorating their projects—you know, the kinds of things you might find at crafts fairs or church bazaars, only better.

Each issue will have 10 to 12 projects, an interview with an expert woodcrafter, product news, tips and techniques, and a 16-page pull-out packet containing full-sized patterns for every featured project. We're even selling precut blanks for those people who can't or don't want to do the woodworking. For more information please see the ad on *page 17*.

Happy holidays, everyone!

Larry Clayton

Photograph: John Hetherington

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This issue's cover wood grain: hackberry *Cover photo: Hopkins Associates*

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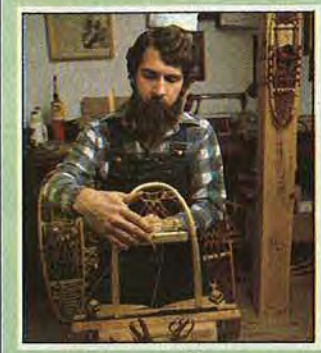


CRAFTSMAN CLOSE-UP **Making tracks** 33
In business for over two decades, East-Coast craftsman Carl Heilman II helps hikers enjoy winter's wonderlands with his high-tech, handmade snowshoes.

Mortise-and-tenon joinery 38
Learn the ins and outs of making this age-old joinery favorite. Our in-depth instructions let you get professional-looking results every time.

Stickley-style plant stand 42
Turn-of-the-century Craftsman styling returns in this solid-oak table project. Discover the secret behind making striking wedge-pin joinery and apply it to any number of furniture pieces.

Winter walk in the woods 46
Senior Editor Pete Stephano and naturalist Larry Totton point out little-known tree traits found in dormant winter woodlands.

SHOP-TESTED TECHNIQUES **Wooden hardware** 50
Why buy hardware for small decorative boxes when you can make it yourself? Here, we show how to craft wooden hinges, lid supports, and pulls.

NOW YOU CAN BUILD IT

The all-wood box 56

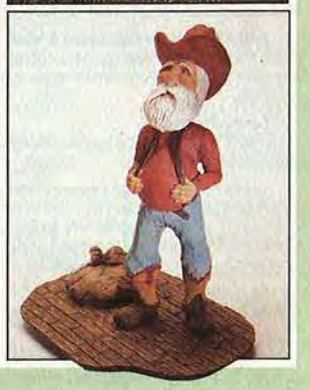
Practice what we preach in our wooden hardware story by building this sensational keepsake container. It features handsome finger joints and a handy lift-out tray.

Workshop stocking stuffers 60

Puzzled over what to jot down on your wish list or give to your woodworking friends this holiday season? Say hello to these good buys.

HOLIDAY HELPERS

Display or give the precious items from this design collection.



4 tree ornaments 64

Teddy-bear music box 66

Steak knives 70

Bud vases 72

Ornamental metals 74

Western Santa 76

Carvers, you'll spread lots of good cheer with this merry cowboy Claus.

Steak knife presentation box 82

Once you make the handsome Walt Easley steak knives featured on *page 70*, turn to this project for safe and tasteful storage.

SHORT-SUBJECT FEATURES

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Mobile Machine Bases

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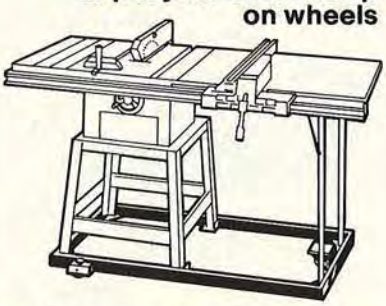

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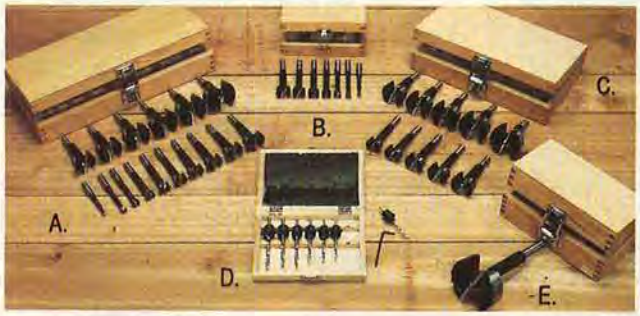

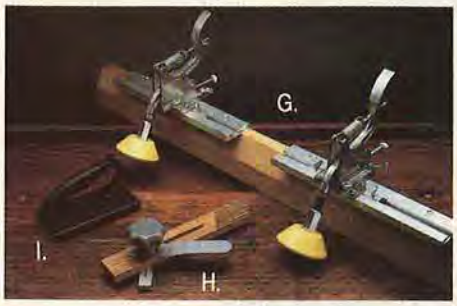

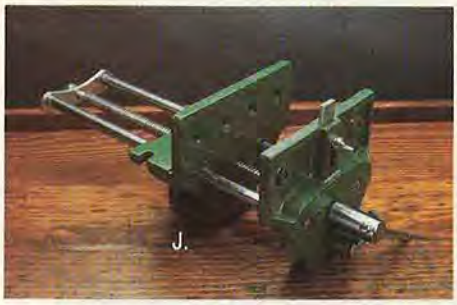

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TALKING BACK

Print this article

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Letters Editor, Better Homes and Gardens® *WOOD*® magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

Marlow sells woodcuts, not patterns

Ever since we published the September 1991 issue, including a feature on Marlow Woodcuts, we have been getting calls from readers wanting to know how they could reach those fine folks in Americus, Kansas. First the bad news: if you're wanting to purchase Marlow patterns, they are not for sale. The good news is that if you're thinking about buying a woodcut, you can get a free brochure by writing Marlow Woodcuts, Box 297, 706 Locust St., Americus, KS 67835.

Woodworker gazes at gazebos

I am a loyal subscriber and enjoy *WOOD* magazine very much. Like many of your readers, I do projects around the house as well as in the shop. Right now I'm interested in building a gazebo. Where can I purchase plans for this project?

—Oscar Berg, Warren, Pa.

While we occasionally design an outdoor project (children's play structures, for instance) geared more toward the do-it-yourselfer than the home woodworker, we currently don't plan a gazebo for these pages. However, our designer, Jim Downing, drew one up a few years ago for Better Homes and Gardens® *magazine. To order that hexagonal gazebo, distinguished by a skylight, send check or money order for $8.95 to* Better Homes and Gardens *Reader Service, Box 374, Department 22M, Des Moines, IA 50336.*

Timeless Designs Inc., Box 676, Whitewater, WI 53190, also sells a book called 55 Gazebos and Other Garden Structures *for $12.90 ppd. You can call them at 800/765-0176. Happy mitering.*

The name's the same, the address changed

In your August 1991 Talking Back, a reader referred to Forstner bits sold by Silvo Hardware in Milwaukee. I can't locate Silvo.

—Wm. Jackson, Troutdale, Ore.

Bill, Silvo changed hands and is moving, according to sales representative Debbie Cashman. Send orders to Silvo Hardware, 3201 Tollview Dr., Rolling Meadows, IL 60009, or call 800/331-1261.

Reader yearns to turn his dowels and rods

In your August 1991 magazine, you had an article written by Philip J. Whitby about the Stanley No. 77 Dowel and Rod Turner. I am a woodworker with a small shop and use dowels in many of my projects. Do you know of any company that makes a small dowel machine, reasonably priced? I called several of the lumberyards in my area, but they were unable to find any in their catalogs. Your help would be greatly appreciated.

Lowell E. Christian, Sequim, Wash.

Lowell, if you just need to make short dowels of favorite woods for gluing, perhaps you can pick up an old dowel-sizing plate at a tool show. Garrett Wade (800/221-2942) carries a line of cutters (the No. 60K02 series) for use in a drill press or lathe. These cutters fashion extra-long plugs, round tenons, and dowels to a length of 3⅛". They come in five sizes from ⅜" to 1", and range in price from $50 to $69.

AMT Powertools (215/948-0400) carries a version of the 18th-century Scottish wooden rounder. It works like the pencil sharpener that came in your grade-school pencil box, except it doesn't round rods to a point; and the cutter adjusts, allowing you to turn your stock down to the desired diameter. Model No. A930 makes dowels ½", ¾", and 1" in diameter, and No. A965 cuts dowels 1¼" and 1½". Expect to pay about $20 a piece for these.

Finally, Woodhaven (800/344-6657) sells a nifty device that will make dowel rods of any length in sizes ranging from ¼" to 1" in diameter. To use it, mount the special jig and 2½"-long core-box

bit on your router base or router table. Then, chuck your square dowel stock into a variable-speed ⅜" electric drill. Start the router, put the stock into the jig, turn on your drill, and then use it to feed the spinning stock through the jig and across the bit. These jigs, available in five sizes, cost about $20 each. The core-box bit sells for about $25 for the ¼" shank, and $30 for the ½" shank.

Continued on page 8

SINGLEY

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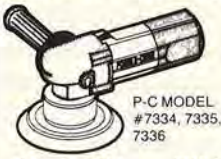

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TALKING BACK

Continued from page 7

HTC disputes mobile-base product review

In the June 1991 issue of WOOD® *magazine, we ran a product review of Delta's mobile stationary-tool bases. The response that follows is excerpted from a letter written by Tim Hewitt, president of HTC Products, Inc.*

It was disheartening to open my copy of *WOOD* and read a headline that sounded more like an advertisement for Delta ("Foot-pedal tool stands have a leg up on the competition") than a product-review headline—especially when HTC is the only other manufacturer of mobile tool bases.

Since 1980, HTC Products has manufactured and sold more than 200,000 Mobile Machine Bases, including more than 1,000 different shapes and sizes that fit models of more than 80 brands of power tools. Demand for our bases is at an all-time high, especially for those we make specifically to mobilize Delta's power tools.

Our bases—made in the United States—feature two fixed wheels and one swivel wheel. This three-point suspension keeps the power tool just ¾" off the floor at all times. Unlike four-point bases, there's no need to raise, lower, and adjust the machine to uneven floors each time you move it. The bases remain stable at all times, and the brakes lock or release with the simple twist of a large, hand-operated knob on each fixed wheel. *[Our review referred to these knobs as nuts, which incorrectly implied the need for a wrench.]*

Never mind a doctor in the house, is there a *WOOD* in the office?

I'm an avid *WOOD* magazine reader who wonders if I'm the only woodworker who sees a doctor. I've been in doctors' offices in Ohio and Florida, and have yet to see a woodworking magazine in them. *Time, Sport, People, House and Garden* are all in those offices. I'm not interested in reading *Ladies' Home Journal*® or the like. We woodworkers need something to divert us while waiting for the doctor, too.

—C.A. Welber, Deerfield, Ohio

Tear-out cards burn up this reader

Please put the tear-out cards at the front or back (not the middle) of the magazine. They irritate me so much that I tear them all out and pitch them before I review the magazine. Also, please number each and every page, regardless of ads. When I receive an issue, I first thumb through it. Then, I type the name of each item of interest (including the tool ads) and accompanying page numbers on peel-and-stick labels. These I stick on the front of the magazine for easy reference.

—Emilia L. Munch, Franklinton, La.

Continued on page 10

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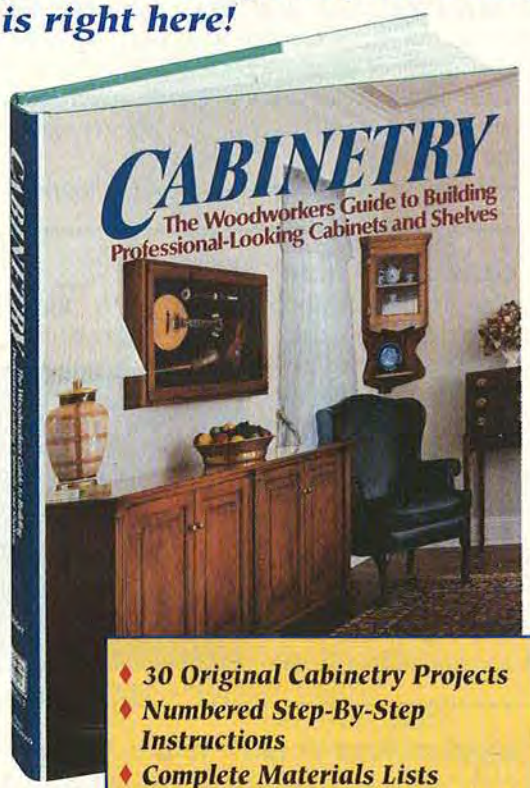

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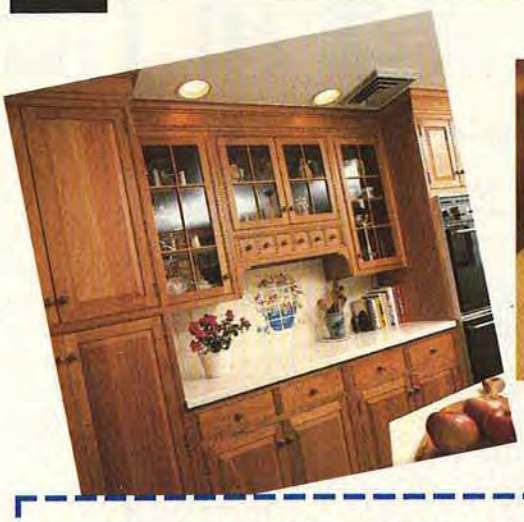

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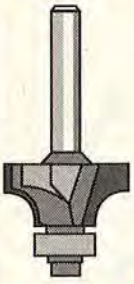

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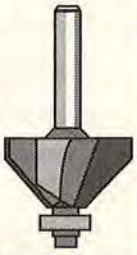

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TALKING BACK

Continued from page 8

Reader in Japan frustrated by the refusal of advertisers to deal with overseas orders

Love your magazine. It keeps me sane over here. I'm surprised that many of your advertisers refuse to deal with overseas orders. It is also difficult when they only give an 800 number, which is not accessible from outside the U.S.

—Stuart J. Walton, Higashi-Matsuyama City, Japan

Project cited as a "hum" dinger

I am enjoying The Craft Shop section you've added. I'm still excited by the "Nature-in-the-round" scrollsawed hummingbird project that appeared in January 1991. After making one for my daughter and another for a neighbor, my wife and I incorporated it into each panel of a four-panel screen we designed to go with our oriental decor. We have other plans for the design, too.

—Ralph Leo, North Canton, Ohio

Making sawdust logs doesn't make "cents"

I am a woodworker by trade, and I end up with a lot of sawdust. Is there a way to make it into fireplace logs?

—Walter Elder, Des Moines, Iowa

Walter, we get asked that question a lot. We don't think it's feasible for the home woodworker or small production shop owner to make such logs. First, you need some type of flammable agent to hold the sawdust particles together, and then you need a high-pressure compactor to mold the logs. Even if you could do this, commercially fabricated "logs" would probably still be cheaper.

What happened to Project Showcase?

I recently made a cocobolo and rosewood serving tray that I want to submit to Project Showcase, but I haven't seen the showcase in your magazine for a long time.

—Charles A. Van Bibber, Portsmouth, Va.

We love seeing pictures of readers' projects, Charles. But, as you noticed, we have stopped running the showcase. We do reconsider the idea from time to time. Trouble is, reader photos are of varying quality, with different lighting and backgrounds. This causes the designers fits when the time comes to lay out the stories. It also affects the production quality when the magazine goes to press.

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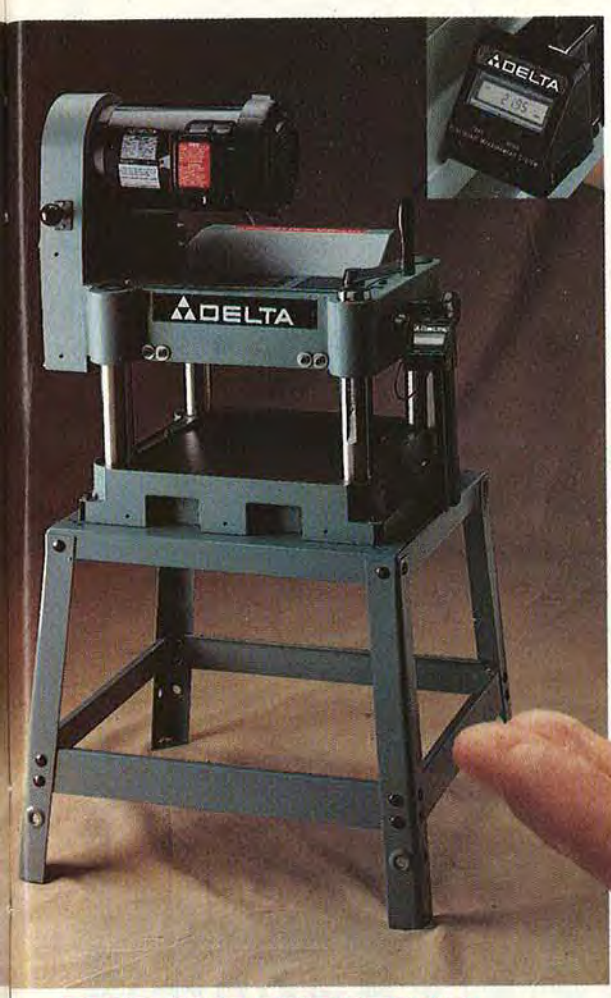

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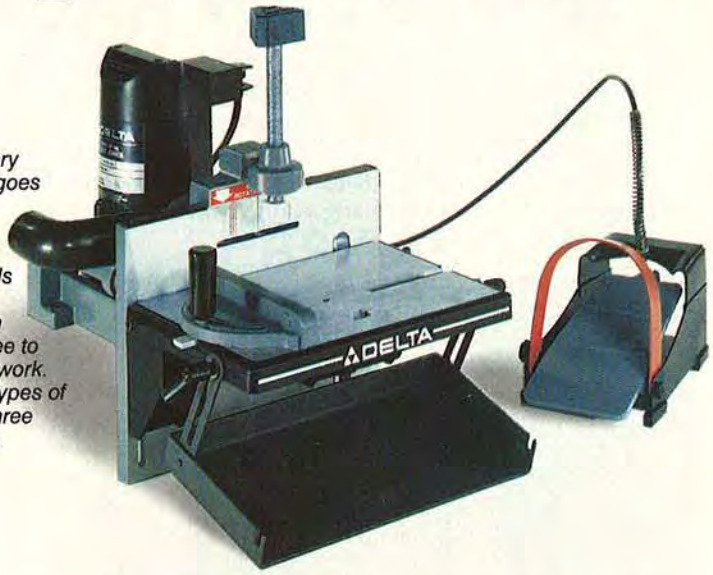

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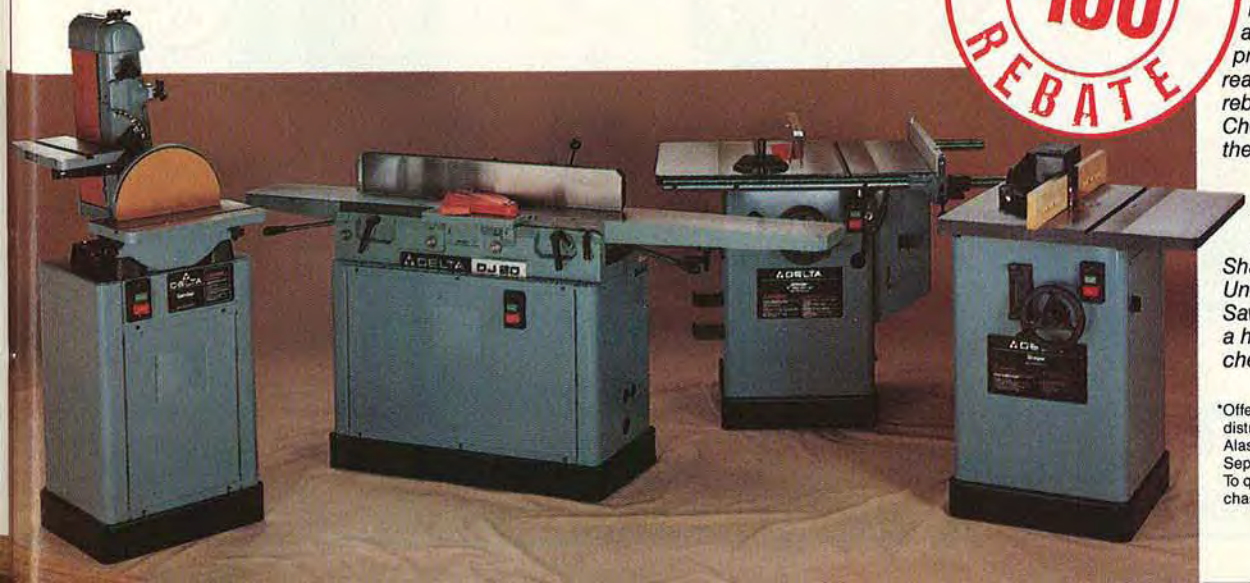

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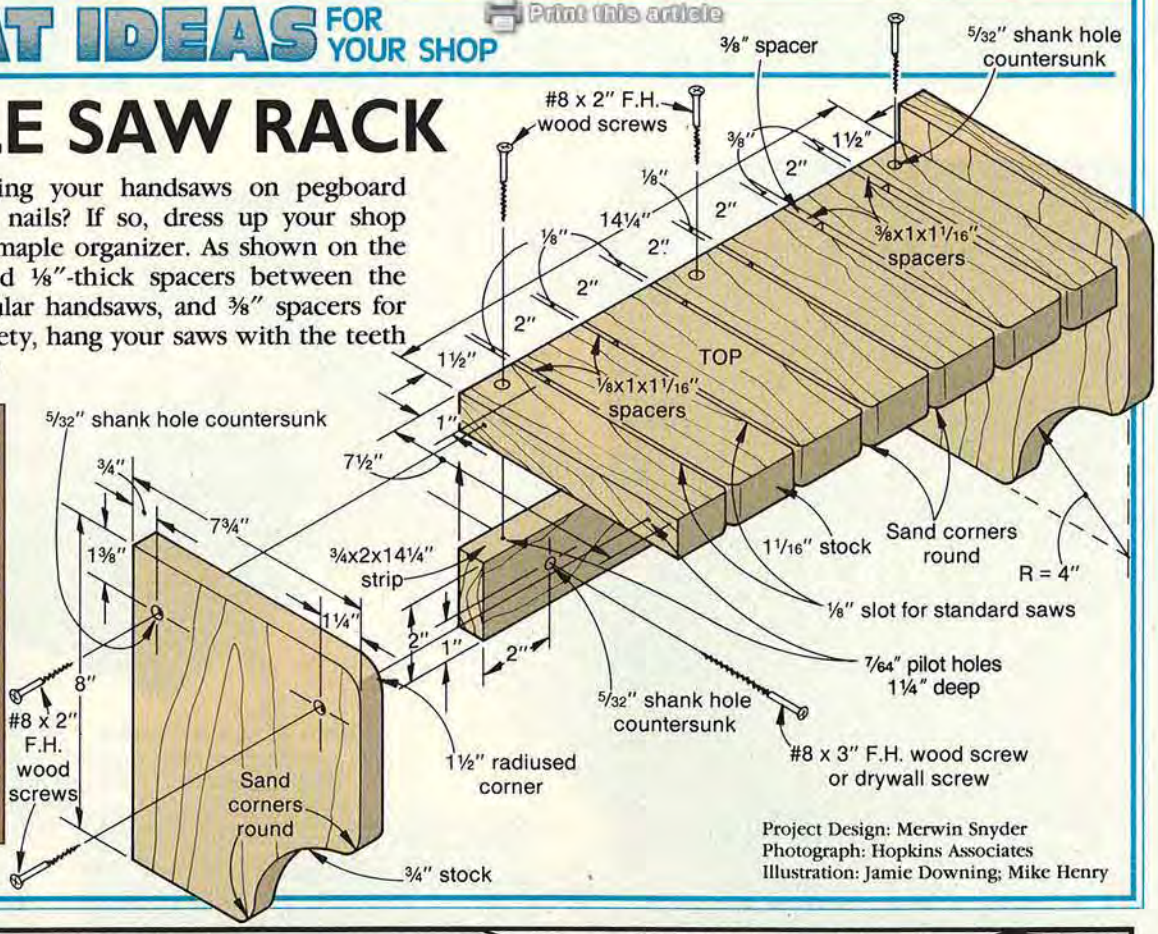
Tired of hanging your handsaws on pegboard hooks or worse, nails? If so, dress up your shop with this sturdy maple organizer. As shown on the drawing, we used ⅛"-thick spacers between the supports for regular handsaws, and ⅜" spacers for backsaws. For safety, hang your saws with the teeth facing the wall.



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Nail set knocks a stubborn router bit out of its collet

Trying to change router bits, the old one won't come out of the collet. You can't get enough of a grip on either piece to get them apart.

TIP: Hold a nail set against your benchtop with the tip pointing up. Then, put the open bottom of the collet over the nail set and push against the router-bit shank. Tap the shank end against the nail set until the bit breaks loose.

—From the **WOOD** *magazine shop*

Start with steel to keep brass screws from breaking

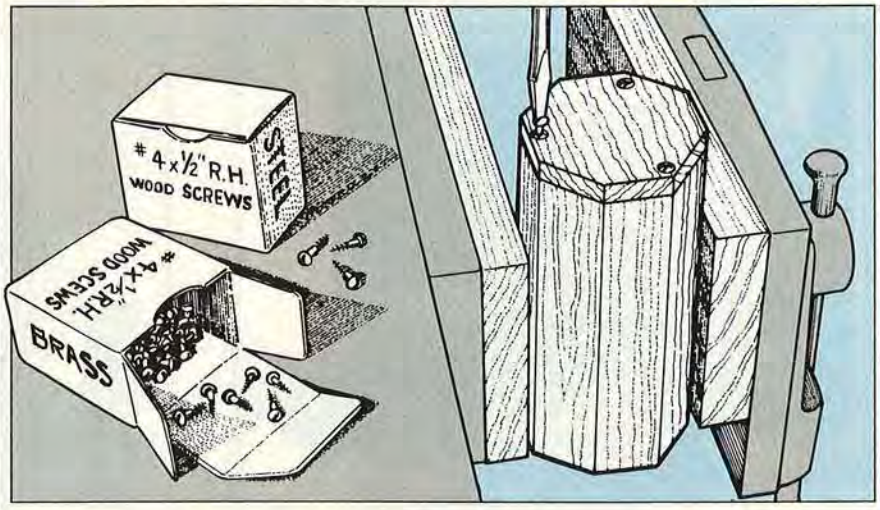
Small brass screws often break as you try to drive them in. You really have a problem when the screws are smaller than your smallest drill bit and you can't drill a pilot hole.

TIP: Before trying the brass screw, drive in a steel screw the same size. The stronger steel one will form threads in the wood so your brass screws will go in without fuss or breakage. If you can't drill a pilot hole, poke one with a small wire brad or nail.

TOP SHOP TIP

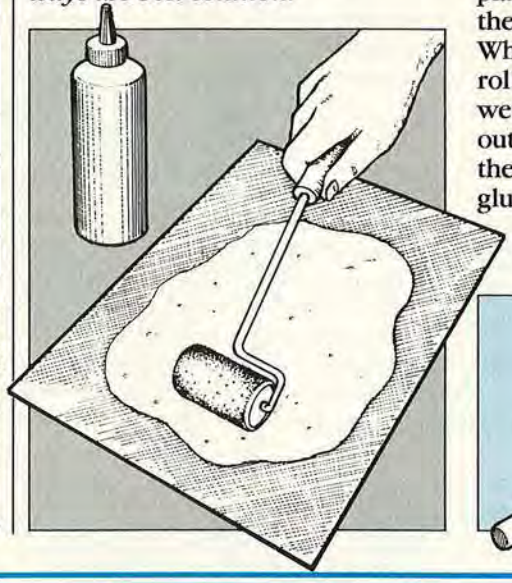
—Lt. Col. D.W. Porter, Woodbridge, Va.

For his tip, Lt. Col. Porter receives a Grizzly G-1013 sander, shown *right*.



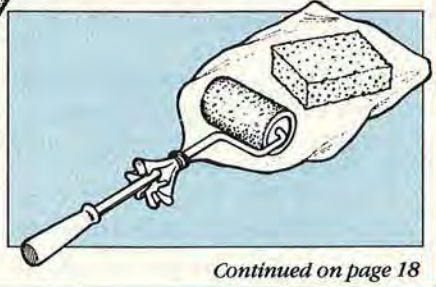
Roll on the glue for better coverage

When laminating or edge-gluing stock, you often need to put on a lot of glue quickly and evenly. Spreaders or your finger aren't always the best solution.



TIP: Glide the glue on with a 3″ paint roller. Just pour some glue on a palette—a 10-12″ square of any nonporous material such as plastic laminate will do. Now, load the roller as you would with paint. When you take a break, seal the roller in a plastic bag along with a wet sponge to keep it from drying out. When you're finished, wipe the palette clean, or scrape off the glue after it dries.

—Craig Carlson-Stevermer, Arden Hills, Minn.



Continued on page 18

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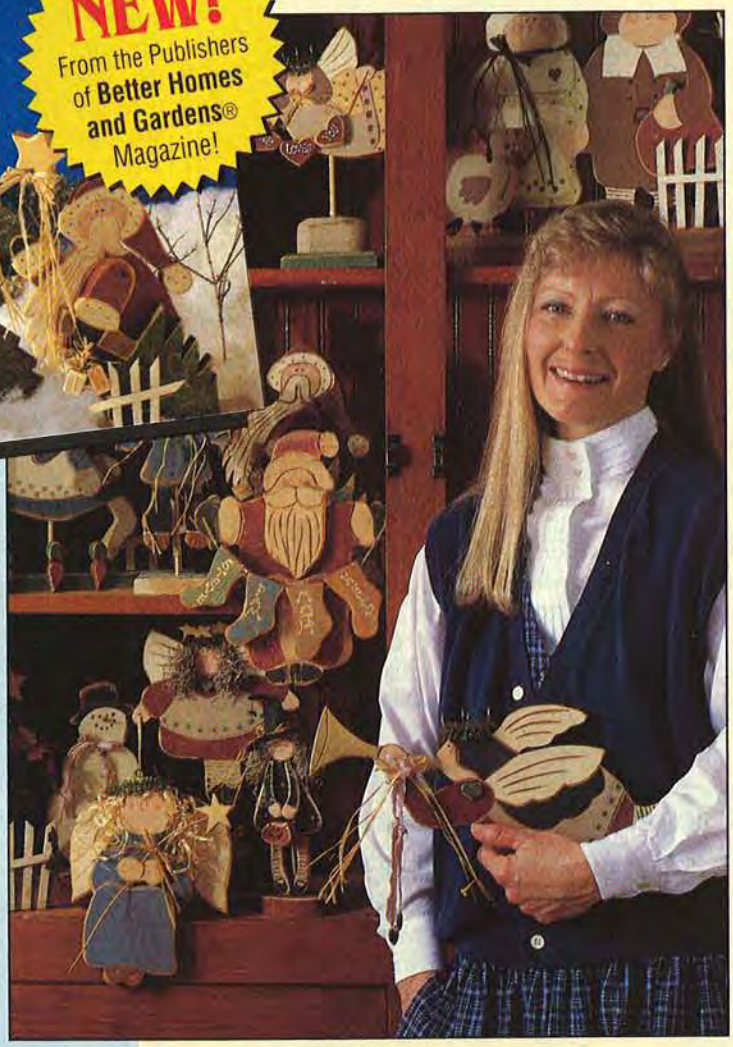

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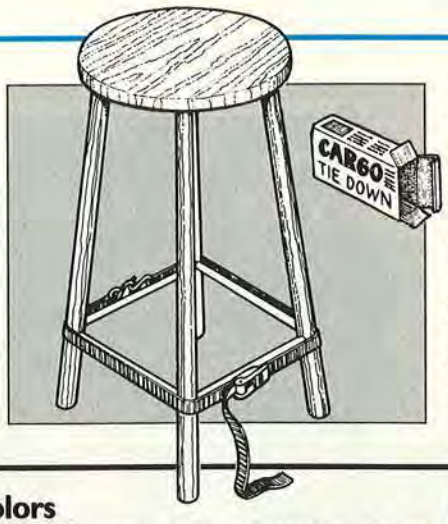
4MAG2

TIPS FROM YOUR SHOP (AND OURS)

Continued from page 16

Cargo tie-down strap cuts clamping costs

Those nylon-strap woodworking clamps sure are handy around the shop. But what can you do if your tool budget doesn't allow for enough of them?



TIP: Check into ratcheting cargo tie-down straps, the small ones about an inch wide made to secure loads in a pickup truck. Buy them at auto-supply stores, discount stores, or hardware stores. They're usually cheaper than similar woodworking clamps (sometimes nearly half the price) and are more likely to be on sale. There's a drawback for some applications: tie-downs don't come with 90° corner brackets for clamping frames and boxes as the woodworking clamps do.

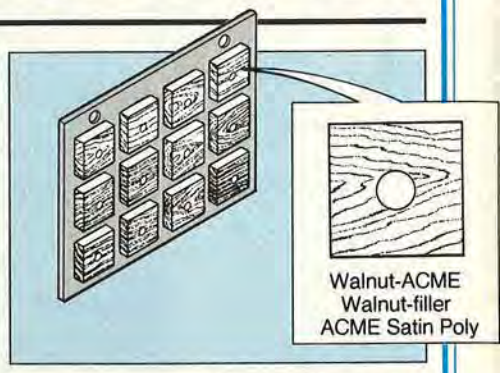
—Richard Holmquist, Grand Island, Neb.

Patches of putty show true colors

The wood filler you put into a bunch of nail holes didn't match the wood at all. And then it stained so dark that your project has little dots on it now. The unfilled nail holes looked better.

TIP: Make a color chart for wood fillers and putty. On uniform-sized samples of woods you commonly use, drill ½" holes about ¼" deep. Fill each hole with a different putty or filler, let it set, and sand. Apply your usual stains and finishes to some of the samples, then label each one. Now, when you need to pick a filler, compare the wood you're using to the test patches to find a match.

—Charles Howard, Middleburg, Va.



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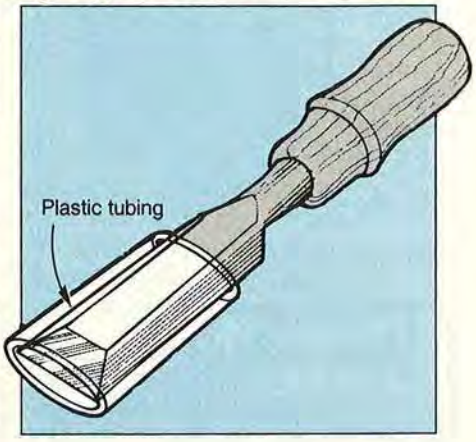
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 18

Tubing keeps chisel edges from going down the tubes

When you have to store chisels in a drawer or toolbox with other tools, the sharp edges often get chipped and dulled. They'll still be sharp enough to gash your fingers when you reach in there, though.



TIP: Slip some plastic tubing from the hardware store onto those blades, extending it past the edge. Pick tubing that fits the blade snugly. Now, your edges and your fingers will be safer.

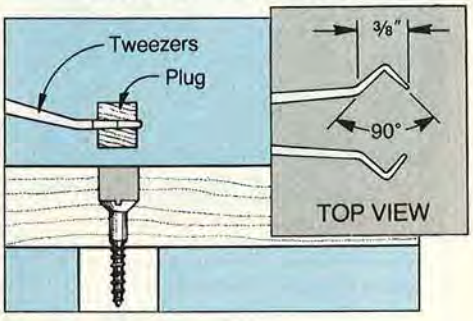
—Kenneth Rewinkel, Sunnyvale, Calif.

Altered tweezers grab pesky plugs

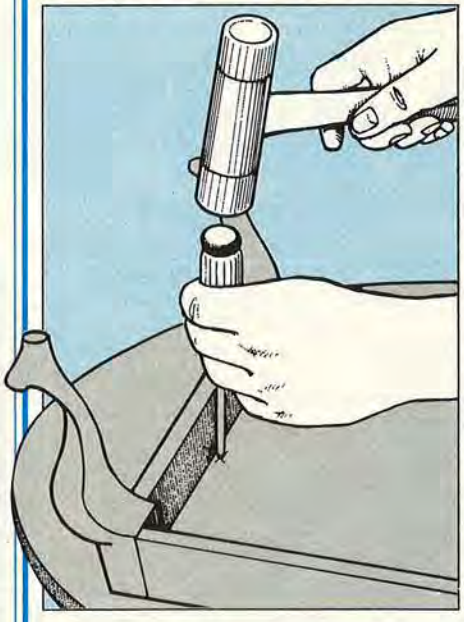
Inserting a plug over a countersunk screw head often becomes a vexing, messy task. Trying to hang on to the glue-coated plug while lining it up and tapping it into place can make even the most skilled woodworker feel like a fumble-fingered incompetent.

TIP: Stop by the drugstore and buy a pair of tweezers, large ones with angled tips. Heat the ends with a propane torch and re-form them, as shown *right,* with needle-nosed pliers. With the modified tweezers, you'll have a firm grip on the plugs and your fingers won't be getting in the way.

—Robert Shermer, Los Osos, Calif.



Phillips screwdriver aids assembly more ways than one



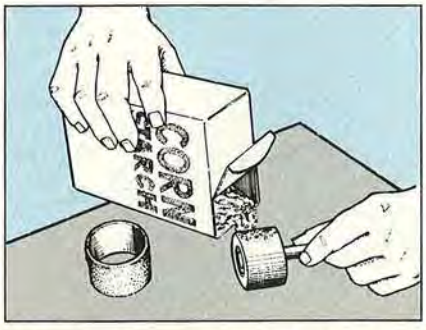
Everything fits up fine, but now you need to take your project apart for finishing. How can you be sure you'll get the parts back together just right?

TIP: Make index marks on mating surfaces and matching parts with your Phillips screwdriver. On the back, underside, or some other inconspicuous spot, put the screwdriver tip against the wood and tap the handle to make a small X. Mark the adjacent piece the same way. You'll be sure to see your mark if you make a pair of X's close together. The screwdriver marks won't disappear when you sand or finish the project as pencil marks would.

—from the **WOOD** *magazine shop*

Cornstarch prevents sticky sanding drums

Drum sanders save a lot of time in the shop. You lose a lot of that saved time, though, when you have to change the sleeve and it's stuck to the rubber drum.



TIP: Sprinkle a little cornstarch on the rubber sanding drum before you put on the sleeve. Cornstarch prevents the two sticking together, so sleeve changes are easy.

—Al Lantinen, Portsmouth, N.H.

Super-fine sandpaper puts polish on project

You've sanded your project carefully with 600-grit paper but the wood still doesn't feel quite as smooth as you'd like.

TIP: Try some finer sandpaper for a super-smooth surface. 3M Imperial Wetordry Color Sanding Paper, available from automotive-paint suppliers, comes in 1,000-, 1,200-, 1,500-, and even 2,000-grit. You'll sand your way to a fabulous finish, even with one of the middle grades.

—John Hermeling, Centralia, Ill.

Continued on 22

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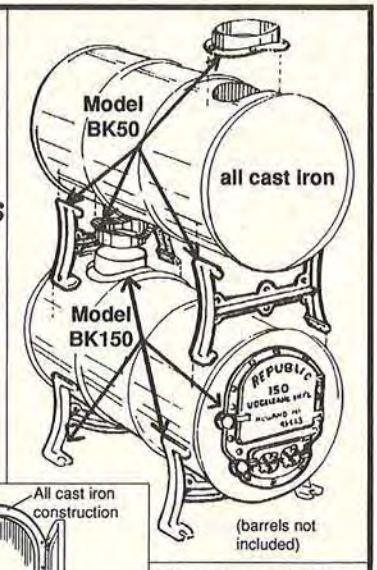

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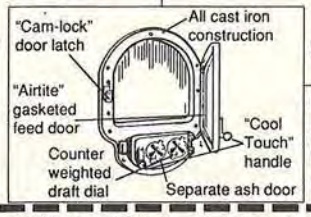

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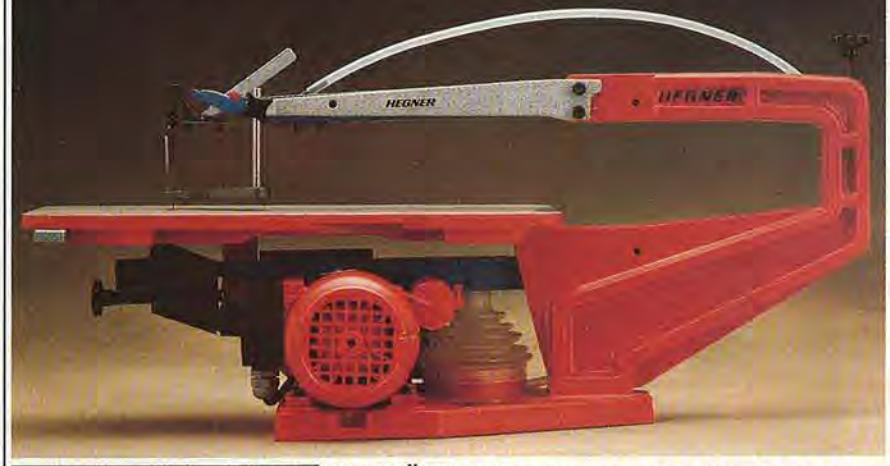

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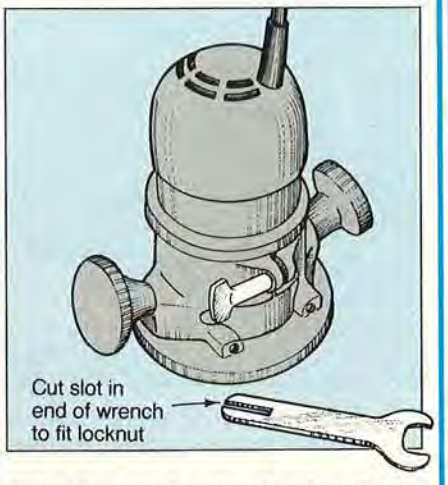
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 21

Cut a slot in your wrench to loosen a tough nut

You can't get enough of a grip to loosen the height-adjustment locking nut on your router.



TIP: Cut a slot in the handle of one of the collet wrenches, shown *above*. Size the slot to fit the locking nut on your router. Now, you won't have to resort to pliers—the right tool will always be near at hand.

—Jack E. Battalia, M.D., Portland, Ore.

MORE TIPS FROM OUR WOODWORKING PROS

- Want to try some different joinery? Check out the wedged-through tenons from our Stickley-style plant stand on *page 42*.
- Looking for a way to form round recesses larger than your biggest drill bit? Turn to *page 66* to see how to do it starting with a circle cutter and finishing up with a router. It works great for forming the clock-movement recess in the back of a slab face.
- Take a look at the music box on *page 66*. Even if you don't need the music box, you can put together the little bear sitting on its top. Decorate a box lid with one or just build the sitting bear as a neat knickknack.
- Build stylish boxes easily with our box-joint jig. See how to construct it on *page 57*.

NOW FOR THE WINNERS OF OUR GREAT SHOP-ORGANIZER HUNT

This multipurpose tool cabinet by Gregor Jakob features specialized storage for hand and portable power tools, reference books, and hardware. Gregor won a Delta 10″ mitersaw for his winning entry.

When we announced our Great Shop-Organizer Hunt in the February 1991 issue of *WOOD*® magazine, we got more than we bargained for. You sent us almost 2,000 photos, drawings, and even a videotape of the homemade storage creations that you use to organize your shop. Judging on the basis of efficiency, originality, and usefulness, we found so many terrific entries that we picked 15 winners instead of the even dozen we advertised.

We divided the finalists into two groups: A) tool prizewinners, see *below*, and B) cash winners. Those receiving cash awards, which ranged from $100 to $150, may also get to see their winning entry in our "Great Ideas For Your Shop" column. The first one's in this issue on *page 14*.

You'll find the complete listing of winners *below*, along with their winning entries. Congratulations to all of you who won, and a hearty thanks to all who participated.

Although the contest is over, we're still looking for other shop-organizer projects for the magazine. Send them to Marlen Kemmet, How-To Editor. We'll pay $100-$150 for each project that we publish.

The six tool prizewinners in our (A) group walked away with their choice of a Delta 10″ motorized miter box, a Ryobi 3hp router, or $150.

TOOL PRIZEWINNERS:

Leo M. Wagman, Carlton, Minn.
A portable router cabinet complete with four routers and accompanying bits.
Ron Cameron, Lumsden, Sask.
A rotating air compressor hose holder.
Dr. G. Bishel, Taber, Alta.
An accessory storage cabinet that fits underneath a Shopsmith Mark V.
Harry Saul Surrey, B.C.
A tool storage case.
Donald Wellman, Coldwater, Ohio
A mobile safety/finishing cart.
Gregor Jakob, Schomberg, Ont.
A multipurpose tool cabinet.

CASH PRIZEWINNERS:

Clyde Allison, Cadillac, Mich.
An on-wall wrench holder.
Paul Bede, Dalton, Pa.
An on-wall hammer holder.
Merwin Snyder, Penn Yan, N.Y.
An on-wall handsaw holder.
Bob Colpetzer, Clinton, Tenn.
An on-wall pliers holder.
Ray Russell, Des Moines, Iowa
A router-bit storage unit.
Mike Branam, Lake Oswego, Ore.
A router-bit holder.
Philip Belanger, Kissimmee, Fla.
A stackable screw six-pack.
Kevin Heilman, Modesto, Calif.
A wood-plane holder.
Richard Tollefson, Glendale, Ariz.
A clamp rack.

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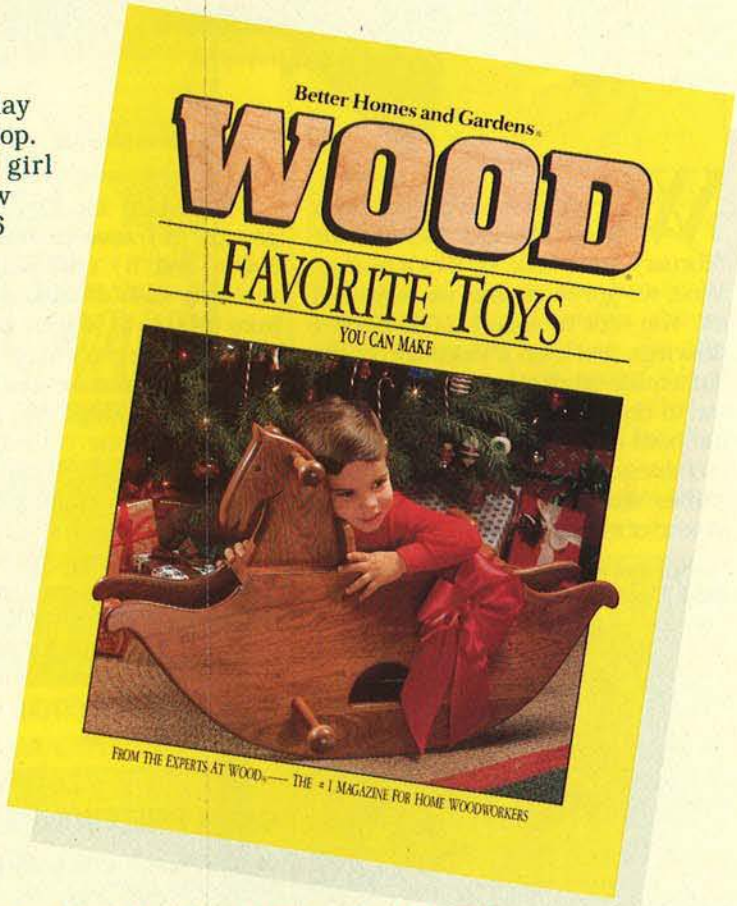
Fill a child's world with delight this holiday season by giving a handmade toy from your workshop. Better yet, build a sackful to please every boy and girl on your list. You can do it with the help of our new book "Favorite Toys You Can Make". Included are 26 timeless designs, ranging from easy-to-make playthings to more challenging projects.

This all new, hard-cover, 96-page publication (which includes full-color photos of every project), presents toys for a variety of ages and in a range of sizes. Best of all, these toys are heirlooms in the making. While any child could ride happily into the sunset on the ever-popular Rocking Horse, for instance, its rugged construction makes it sturdy enough to withstand a band of buckeroos.

"Favorite Toys You Can Make" walks you through every project with a materials list, easy-to-understand instructions, detailed drawings and handy tips from the WOOD Magazine shop. Order your copy now to ensure plenty of shop time before the holiday rush.



Yes! I want to make the most popular wooden toys from WOOD® Magazine. Please send me " Favorite Toys You Can Make" for just $14.95 U.S. ($16.95 Canadian). Price includes postage and handling.

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WOOD® Magazine announces:

1992 BUILD-A-TOY™

Fourth Annual Contest to benefit children through Toys-for-Tots.

ENTRY DEADLINE: FEBRUARY 1, 1992
Great prizes for every skill level!
Prizes for Original Designs and Built from Plans!

We're proud to invite woodworkers of every age and skill level to participate in our Fourth Annual BUILD-A-TOY Contest.

Design prizes will be awarded for toys built from original plans. **Several of these toys will be chosen for future editorial features in WOOD!** Special Citation prizes are open to all woodworkers who send us a toy.

BUILD-A-TOY is the best way we know of for woodworkers to get the recognition they deserve for great craftsmanship. And the toys you submit will be contributed to the Toys-for-Tots program of the U.S. Marine Corps Reserve and distributed to underprivileged children this Christmas!

Enter our BUILD-A-TOY contest; help promote the wonderful craft of woodworking, win some terrific prizes, and make a child very happy this holiday season. Please join us!

Above top: *Editor and Publisher of WOOD Magazine with children from St. Barbara's Head Start Program at a special BUILD-A-TOY reception in New York City, December 1990.*

Above bottom: *Award-winning BUILD-A-TOY entries on display at the Museum of American Folk Art, December 1990.*

COMPETITION PRIZES AND CATEGORIES

	STUDENT (K-12):	HOME HOBBYIST:	PROFESSIONAL:
DESIGN PRIZES: These 12 categories are open to original designs only.			
Grand Prize	Black & Decker: $1,000 in merchandise	Delta: $2,500 in merchandise	AEG: $1,000 in merchandise
First Prize	Grizzly: $500 in merchandise	Shopsmith: Mark V ($1,600 value)	Porter Cable: $1,000 in merchandise
Second Prize	Skil: $500 in merchandise	Ryobi: $1,000 in merchandise	RBI: 16" variable speed Scrollsaw ($750 value)
Third Prize	American Tool Co.: $500 in merchandise	Lobo: $500 in merchandise	Wilke: BWI-P Planer ($400 value)
SPECIAL CITATIONS: These 36 categories are open to both original and existing designs.			
Best use of Wood	Adams Wood Products: Assortment of Turning Squares	Woodcraft Supply Corp.: $100 gift certificate.	Makita: $500 in merchandise
Best Carved Toy	Dremel: $500 in merchandise	Dremel: $500 in merchandise	Dremel: $500 in merchandise
Best Finish	Deft: $1,000 in merchandise	Minwax: $500 in merchandise	Minwax: $500 in merchandise
Best Truck	Klockit: $100 in merchandise	Meisel: $500 in merchandise	Brandmark: Branding Iron
Best Car	Constantine: $100 in merchandise	Toys & Joys: Antique Car Plans	Furniture Designs, Inc.: Furniture Plans
Best Pull Toy	DML: 10" Carbide-Tipped Blade	How-To Book Club: $100 gift certificate	Woodmaster: $100 gift certificate
Best Train	Rodale: Woodworking Books	Seven Corners: $250 in Power Tools	Milwaukee Electric: 4" Belt Sander with Bag ($348 value)
Best Bank	Klockit: $100 in merchandise	Formby's: 3 Gift Sets	DML: 10" Carbide-Tipped Blade
Best Airplane	Geneva Specialties: $100 in merchandise	Accents in Pine: Set/Blueprints	Industrial Abrasives: $250 in merchandise
Most Number of Toy Entries	Accuset Tool: ParaGauge	Woodworkers Book Club: $100 membership	Econ Abrasives: $100/Sandpaper
Best Cradle	Geneva Specialties: $100 in merchandise	Sears Craftsman: 20" Scrollsaw ($400 value)	Penn State: Variable Speed Scrollsaw
Best Puzzle	St. Croix Kits: Thumb Piano	MLCS: Master Set	Formby's: 2 Gift Sets
STUDENT SPECIAL ENTRY PROJECT:		This category is open to student woodworkers who build a toy plane from plans found on page 58 of the October 1991 issue.	
Best Toy Plane	Woodworkers Book Club: $100 membership		
HOME HOBBYIST/PROFESSIONAL PROJECT:		This category is open to home hobbyists or professional woodworkers who build a toy from plans in WOOD magazine's new book, *Favorite Toy Projects You Can Make.*	
Best Toy Project	Leichtung: $250 in merchandise		

See page 84 of the October 1991 issue for complete rules.

WOOD® Magazine's 1992 BUILD-A-TOY Competition

There is no limit to the number of entries. Please provide the following information for each toy submitted.

My entry is: ❑ Original design* ❑ Built from plans ❑ Special Entry Project

My skill level is: ❑ Student ❑ Home Hobbyist ❑ Professional

*For Original Design entries: I certify that I have designed and built this toy myself. Should my entry win, I agree to cooperate with WOOD Magazine to supply builder's notes and a bill of materials for publication.

Signature_____ Date _____

Name _____

Address _____

City _____ State _____ ZIP _____

Phone (___)_____

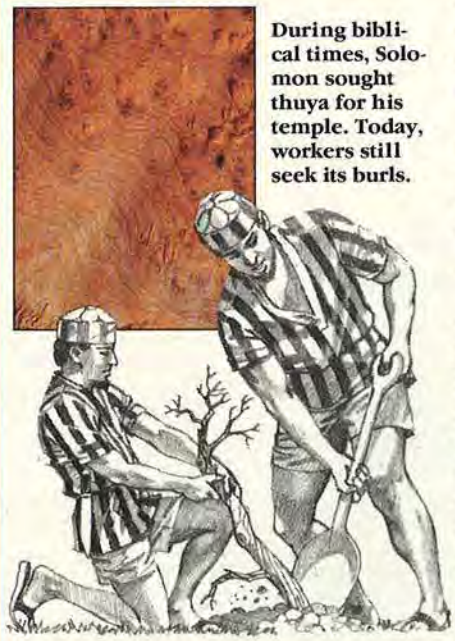
Send toys to: 1992 BUILD-A-TOY, WOOD Magazine, 1912 Grand Avenue, Des Moines, IA 50309-3379

1992 BUILD-A-TOY ENTRY DEADLINE: FEBRUARY 1, 1992.

Print this article

THUYA

Burled beauty beneath the ground



During biblical times, Solomon sought thuya for his temple. Today, workers still seek its burls.

According to the scribes of ancient Rome, woodworkers considered precious the wood thuya *(Tetraclinis articulata)*. Even in 100 B.C., Marcus Tullius Cicero, a noted Roman statesman, paid 300,000 denarii (about $60,000) for a table made from this native wood of Morocco and Algeria's Atlas Mountains.

However, thuya's premium price was no doubt attributable to Solomon, who ruled Israel about 800 years before Cicero lived. To augment the Lebanese cedar in his new temple, Solomon sent axmen to Northwest Africa to seek exciting wall material. There they discovered the greatly figured and fragrant thuya, or thyine wood, as it's called in the Bible. Solomon's laborers cut great quantities, setting thuya's popularity—and demand—for the following centuries.

Thuya, a type of cypress, never grows very large. At best, it attains a 50′ height and develops a 1′-diameter trunk that's very often twisted. Its yellowish brown to red heartwood, though, always has desirable figure and works easily to a smooth finish.

Today, little thuya wood leaves its native land in board form. Instead, workers dig beneath the ground to retrieve the tree's root burls. These are sliced into thin, bird's-eye figured veneers for marquetry and custom furniture. It seems that the root of the thuya tree has a tendency to copice (develop new sprouts) underground. Where these sprouts die off, a beautiful burl always forms.

Illustration: Jim Stevenson

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#152	3/8"	2"	7.00
#153	1/2"	2"	7.95
#154	5/8"	2"	8.95
#155	3/4"	2"	12.00
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1/2" Shank

	Cutting Dia.	Length	Sale
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#163	3/8"	2 1/4"	9.00
#165	1/2"	2 5/8"	10.50
#167	1/2"	3 1/2"	18.50
#169	5/8"	4"	21.00
#171	3/4"	2 5/8"	12.00
#172	3/4"	3 1/2"	19.50
#173	1"	2 5/8"	13.50

Dovetail Bits

14 Degree

	Cutting Dia.	Shank	Sale
#242	3/8"	1/4"	$ 7.50
#243	1/2"	1/4"	8.00
#245	3/4"	1/4"	10.00
#250	1/2"	1/2"	8.50
#253	3/4"	1/2"	10.50
#254	1"	1/2"	14.00

Laminate Trimming

Flush 1/4" Shank

	Carbide Dia.	Length	Sale
#345	3/8"	1 3/16"	$8.50
#346	1/2"	1 3/16"	8.50

Flush 1/2" Shank

#348	1/2"	1 3/16"	9.50
#349	5/8"	1 1/8"	10.00

Pattern Cutting

With Top Bearing

	Dia.	Shank	Sale
#470	1/2"	1/4"	$16.00
#471	5/8"	1/4"	17.00
#472	3/4"	1/4"	18.00
#475	1 1/8"	1/2"	24.00

Roundover

	Radius	Shank	Sale
#321	1/8"	1/4"	$15.00
#322	3/16"	1/4"	16.00
#323	1/4"	1/4"	17.00
#324	5/16"	1/4"	18.00
#325	3/8"	1/4"	19.00
#326	1/2"	1/4"	21.00
#327	1/2"	1/2"	21.95
#329	3/4"	1/2"	26.95
#331	1"	1/2"	47.95
#332	1 1/4"	1/2"	49.95

Roman Ogee

	Radius	Shank	Sale
#381	5/32"	1/4"	$22.00
#382	1/4"	1/4"	23.00
#383	5/32"	1/2"	23.00
#384	1/4"	1/2"	25.00

Rabbeting

	Depth	Shank	Sale
#186	3/8"	1/4"	$16.95
#194	3/8"	1/2"	17.95

Classical

	Radius	Shank	Sale
#433	3/8"	1/4"	$29.00
#434	1/2"	1/4"	32.95
#435	3/8"	1/2"	29.95
#436	1/2"	1/2"	33.95

45 Degree Chamfer

1/4" Shank

	Cutting Dia.	Length	Sale
#291	1 3/8"	1/2"	$23.95

1/2" Shank

#295	1 3/8"	5/8"	24.95
#296	1 5/8"	3/4"	25.95
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#273	1/4"	9/16"	29.95

Cove Bits

	Radius	Shank	Sale
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#305	3/8"	1/4"	19.95
#306	1/2"	1/4"	21.00
#307	1/2"	1/2"	21.95
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I tried it out on a broken ¼" blade in the *WOOD®* magazine shop. Following the tool's instructions, I first made the simple grinding jig using the plans that accompany the kit. Then, using the jig, I ground bevels on the broken blade ends, applied flux to them, and clamped them in the splicer. Next, with a propane torch, I sweated silver solder between the ends, cooled and cleaned them with a moist rag, and put the blade back on my saw. That repair has held through several resawings and curved cuts over the last six months.

If you don't relish leaving broken blades at the local repair service, you may find the Sure-Splice a real time-saver. More important, it may save you money as well. With the cost of repairing ⅛", ¼", and ½" blades running around $6, and new bandsaw blades in these widths costing from $5 to $15, you could pay for the kit after only five Sure-Splice repairs. With enough solder and flux in the kit to do 30 repairs, that puts you some 25 repairs ahead.

—Tested by James R. Downing

Sure-Splice Bandsaw Blade Splicer, $32.95, from J.K. Woodcraft, P.O. Box 081912, Rochester, MI 48308.

Incra's rig-a-jig videotape

If, like many woodworkers, you set aside your Incra Jig (and dreams of breathtaking joinery) shortly after you got it home because you couldn't figure it out, help is on the way. Incra inventor Chris Taylor has released *The Complete Incra Jig Video,* a detailed 60-minute videotape intended to demystify the making of the precise, stunning joints that attracted you in the first place.

Taylor demonstrates on the router table the making of box joints, half-blind, sliding, and through dovetails; and even Incra's new double-double box joint (see the bottom image on the video box in the photo *left.*) Templates and full-sized plans for making that new joint accompany the tape.

The tape also shows how to zero your jig, center your work, and use the Incra Stop and Incra Fence, as well as the Incra Jig.

If you're struggling with your Incra System, this video can make the difference between creating beautiful boxes and forever storing your jig away on the shelf. And even if you don't own the jig, you may want to buy one after viewing the amazing joinery feats you can create with it.

—Tested by James R. Downing

The Complete Incra Jig Video, by Taylor Design Group, suggested retail price $19.95 from woodworking stores and catalogs.

Roller guides increase bandsaw accuracy

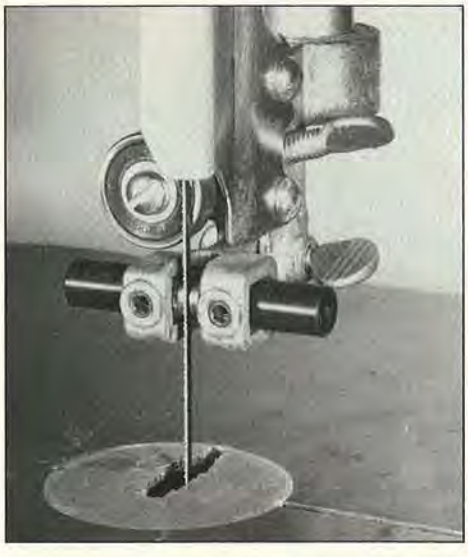
Sawyer Smith designed its Rolling Blade Guide set to increase the accuracy and longevity of narrow bandsaw blades. It replaces the standard steel guide blocks above and below the table of Delta's 14" bandsaw, and some similar saws.

When I worked with the blade guide, I found it easy to install and adjust. The round plastic rods fit tightly inside the square blade-block recesses.

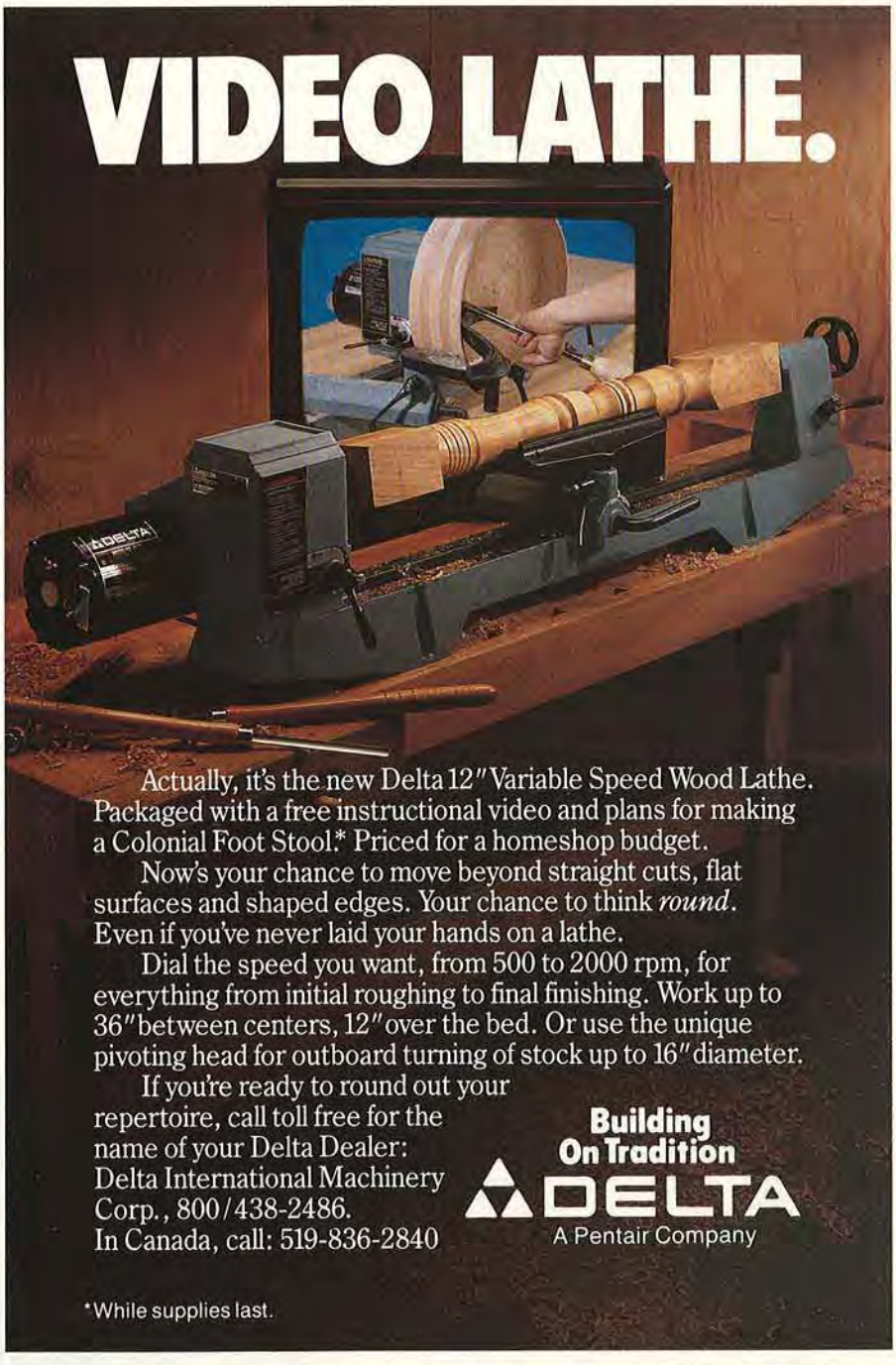
During testing, I found that my blades rode smoothly and quietly in the grooved roller-bearing sleeves. The blade guide kept the bandsaw blade true in the cut and worked equally well with 1/16" and 1/8" blades. After a substantial amount of sawing, I found no appreciable wear on either of the guide's rollers.

When the *WOOD®* magazine shop installed the guide for the photo *below,* Project Builder Jim Boelling liked it so well, he left it on the saw. He likes it for 1/4" blades, too. The bearing axle should be inspected and lubricated periodically.

—Tested by Steve Oswalt



Sawyer Smith Roller Blade Guide, catalog No. 805-299, $36.45 ppd. from Woodworker's Supply, 1108 North Glenn Rd., Casper WY 82601, or call 800/645-9292.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ASK WOOD

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Laying on a high-gloss resin finish

On a recent trip through the redwoods along the northern California coast, I obtained some beautiful pieces of redwood and myrtle. I would like to make a coffee table and a few clocks from some of the pieces, finishing them with a high-gloss, poured resin.

Having absolutely no experience working with resin, I'm hoping that you might be able to give me some tips, or perhaps guide me to a useful source of information for the beginner. I appreciate any help that you can offer.

—Hardy Pruuel, Torrance, Calif.

Hardy, we talked with Fred Benson, president of B.D. Classic Enterprises, which makes polymer resin coatings. We also tried out the product.

To use a resin coating, begin by sanding all exposed surfaces of your workpiece and wipe off the dust. Then, elevate the workpiece from underneath (but not along the edges) to allow the excess finish to run off. Now, thoroughly mix the two-part epoxy-like components in a clean container. Finally, pour the mixture over the top and side work surfaces. The self-leveling product will spread and set up to a smooth, high-gloss finish in 24 hours. Dissolve any bubbles by breathing on the finish or heating with a blow torch held several inches away.

Fred says that while myrtle poses no problem, redwood, which contains tannic acid, does and could cause the resin to turn white when moisture rises. He recommends working with kiln-dried redwood, or coating redwood with two seal coats of shellac before applying the resin. If you can't find poured resin, call B.D. Classic Enterprises at 213/944-6177 for the location of the nearest distributor.

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Doing away with furniture dents

How can I get the dents out of my 30-year-old Early American dinner table?

—Beauton G. Ritchy, Scottsdale, Ariz.

Beauton, we gave your question to head wood finishing instructor Mitch Kohanek at Dakota County Technical College in Rosemount, Minnesota. The college's reputation spreads far and wide in the furniture finishing world. Mitch advises that if you truly cherish your table and don't want to damage the finish surrounding the dents, seek professional help, rather than attempting the repair yourself.

If you insist on doing the work yourself, you can purchase stainable wood fillers at hardware stores or homecenters. These you press into a sanded and cleaned dent. Then, sand the hardened filler, apply a matching stain, and create a matching grain look if needed with a fine brush. Finally, finish with a matching finish such as a lacquer or varnish, being extremely careful while creating the end result. For a lacquer finish, Mitch says "spank the repaired area with a cloth containing lacquer." Use a small fine brush to apply the varnish. Mitch advises testing on scrap before turning to the repair piece.

Teak, just another item on the termite's menu?

On the West Coast, the termite-resistant qualities of redwood and cedar are well known. Is the same true of teak? I have a quantity of this wood for special projects that I would like to store without the worry of termite infestation.

—Peter Lindberg, Sunnyvale, Calif.

To answer your question, Peter, we called the Forest Sciences Laboratory in Gulf Port, Mississippi. There, we talked with research entomologist Lonnie Williams, who's involved with the Wood Products Insect Research Project. He says that "teak offers the same kind of chemical resistance to rot and insects as redwood, cedar, and cypress." But he cautioned that this resistance exists only in the heartwood of these species, particularly that from more mature trees.

For safe storage, Lonnie recommends keeping your stock several inches up off a concrete floor and creating a barrier of plastic or plywood between the stock and the floor. For more help, call the Forest Sciences Laboratory at 601/864-3991.

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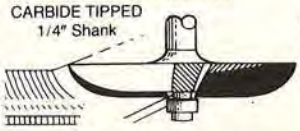

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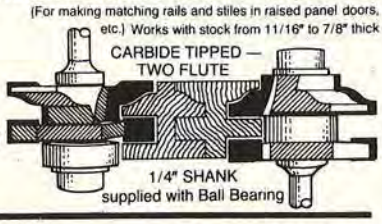

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#206		3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	$13.00
#207		1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	$14.00
#643		1/2" Cove	1/2" R	1 1/2"	5/8"	1/2"	$15.00
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#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	$15.00
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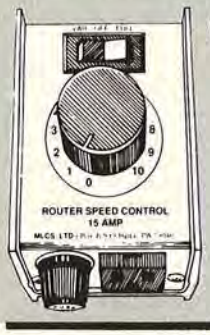

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FOR CARL HEILMAN II, SNOWFALL IN THE ADIRONDACK HIGH PEAKS CALLS FOR

MAKING TRACKS

A SNOWSHOE TRADITION

After a new-fallen snow, Carl Heilman II and son Carl strap on snowshoes for a trek across a nearby lake.

Young Carl Heilman II looked forward to summers at the family vacation home in New York's Adirondack Mountains. But it was a snowbound visit there that set his life's course.

"When I was 16, a friend and I decided to get away from Pennsylvania after Christmas and see winter at Brant Lake," recalls Carl, now in his late thirties. "It started snowing when we arrived. We probably got well over 2 feet. We didn't have any skis or snowshoes, but we stomped around in the deep snow anyway, playing Sergeant Preston of the Yukon."

After high school, Carl thought that the mountains around Brant Lake were the place for him, and he set out to live there year-round. "I became a carpenter, and learned on the job," Carl says. "When I wasn't working, I was off hiking," he adds.

Enjoying winter meant challenging the deep snow, though, and that first year Carl couldn't afford skis or snowshoes. The only answer was to make a pair.

"I found an old turn-of-the-century book of my dad's that showed a lot of outdoor things a boy could make. And snowshoes was one of them," says Carl. "So, I made some Maine-style shoes."

From that first pair, a career was launched. Today, his innovative snowshoes have brought renown in the Adirondacks, and the sharing of a dream with his wife Meg, son Carl, and daughter Greta.

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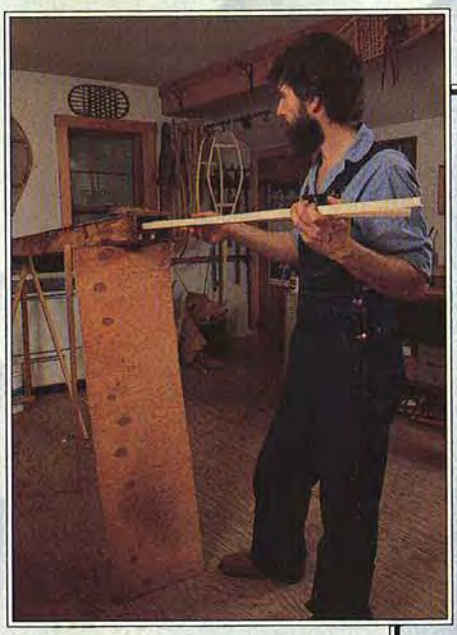
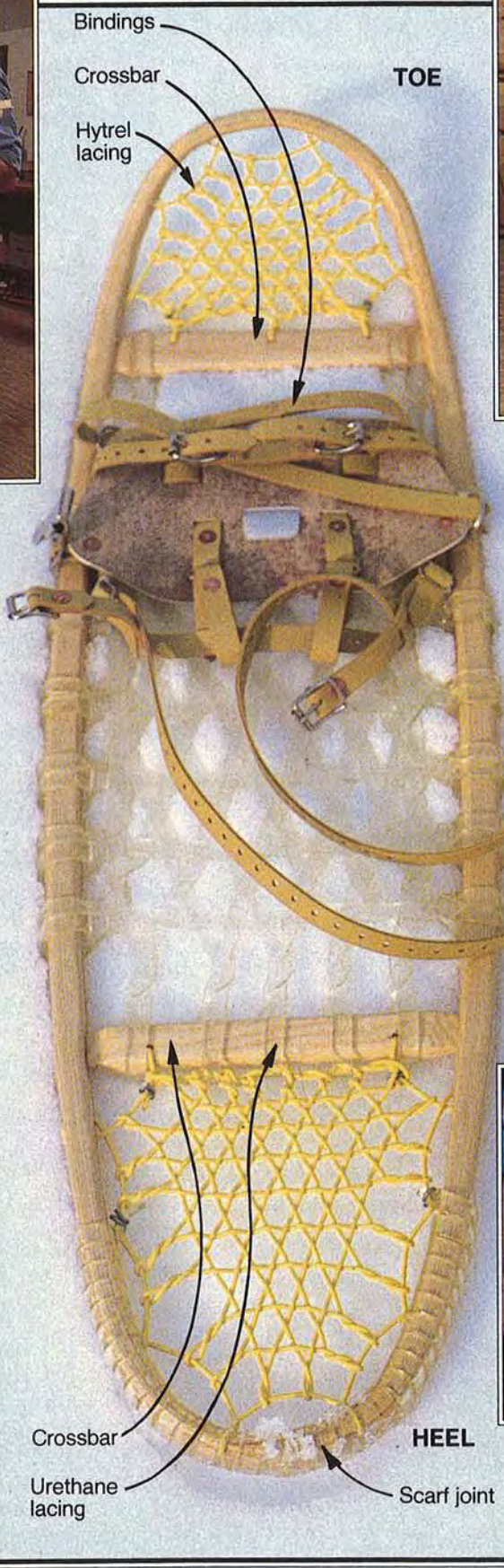
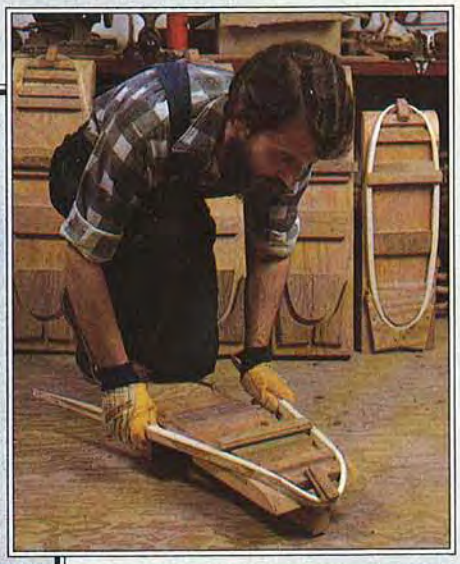


Carl steams the shaped-ash frame splits—a few nearly 10′ long for some styles—for about an hour to make them pliable enough for bending. He hooks the steaming box up to a large tea kettle full of water simmering on the stove.

ANATOMY OF A SNOWSHOE





The ash frame splits must be bent and set in the forms within a minute after leaving the steaming box. Carl bends the hot, damp ash and locks it into the form in one deft movement. Note the snowshoe frame's compound curve.

Snowshoes require much handwork. At his workbench, Carl rounds the frame edges with thin slices from his shop-made crooked knife. The contour inside the frame was done with a drawknife at the shaving horse.

Lacing takes half the total time involved in snowshoe making. Carl makes the task easier by inserting frames in the vise on the lacing frame, where he can kneel as he pulls the wire taut.

About the only power tool Carl uses extensively is a Dremel Mototool. With it, he cuts the mortises for the crossbraces, and recesses for the laces.

Carl Heilman II kneels on the lacing frame, passing a bright yellow strand of Hytrel-coated wire through the bent, bowed ash. "Wet snow soaks snowshoe lacings," he explains, and if the lacing is rawhide, or *babiche*, as the French Canadians call it, it'll stretch. Soon, it'll feel like you have flapjacks on your feet."

After two decades of making and using them, the willowy craftsman understands snowshoes. He makes as many as 100 pairs per year, and he uses his creations to walk the snowy winter cloak of the Adirondack Mountains encircling Brant Lake. While less hardy souls curl up before the fireplace, Carl straps snowshoes to his feet and traverses the towering peaks of an elevated wilderness.

And that testing lets Carl break trail at the leading edge of custom-made snowshoe design and craftsmanship. His combination of tradition and high-tech materials results in snowshoes that perform and endure the way outdoor equipment ought to. "I like to go and enjoy," he says, "and not have to worry about equipment."

The mother of invention

Archaeologists haven't pinpointed the date when man first fastened snowshoes to his feet. They believe, though, that Central Asians first used them about 4000 B.C.

It may have been the ancestors of North America's Indians who brought the snowshoe with them across the Bering Sea on the land bridge that once joined the continents. That would explain why the Indians of the North American snowbelt developed snowshoe technology to a high degree. However, their shoes were built out of the necessity to keep mobile during hunting expeditions, and, compared to models for other uses, were light in weight. Later, pioneer trappers and traders, carrying 80–100-pound packs, needed larger styles to support them.

Carl's snowshoe models display a variety of function-following designs: vertical, in background from left, Green Mountain, Kiddypaw, Trailpaw, Catpaw; in foreground, Ojibwa, behind, Alaskan. The cabin backdrop, on Carl's property, is vintage Adirondack.

They varied by regional conditions, too. Today, names for snowshoe styles still reflect this aspect, for instance, Alaskan, Green Mountain (New Hampshire), Maine, Michigan, and Ojibwa.

Oddly enough, snowshoes never caught on in Europe. There, skis always have dominated the winter scene.

Great strides in snowshoes

According to Carl, snowshoes traditionally fall into two types: bearpaws, and those with a tail. The bearpaw style, shown in the photo *opposite page,* has a rounded heel and looks somewhat like its namesake. The tailed shoe, such as the Alaskan or the Ojibwa shown on the snow in the photo *left,* has a frame that joins to form a sometimes long tail that helps keep the snowshoe tracking straight.

Carl's snowshoes, made in seven styles and selling for $175 to $375 per pair (bindings extra), encompass heritage as well as innovation. His Catpaw, for instance, maintains somewhat of a bearpaw shape. But it's innovative because Carl has scaled the Catpaw down in size as well as narrowed it.

Through the winter snowshoeing workshops he teaches for the Adirondack Mountain Club, Carl gets to know consumer needs. "In the '90s, people are mostly interested in recreational snowshoeing rather than 'working' shoes for hunting, trapping, or transporting heavy loads. And recreational snowshoeing calls for light, easily maneuverable shoes," claims Carl. "In fact, many cross-country skiers want snowshoes to carry along, so they can't be heavy or bulky."

The smaller, sleeker snowshoes that now lead Carl's line evolved partly from racing experience. "In 1980, I designed my first lightweight wooden-frame Catpaws and used them for racing in U.S. Snowshoe Association [now defunct] events. They were great on the track, so I said 'Shoot, why not in the woods?'

"Meg and I took them out and put them through all kinds of tests in the High Peaks where nobody had been making tracks. We found out that they did need a heavier frame to hold up, and that was the beginning of today's Catpaws and similar,

Continued

but somewhat longer snowshoes that I christened as Trailpaws."

The hand ways of snowshoes

"I have mapped out my own way of making snowshoes, and it works real well for me," explains Carl as he mounts the shaving horse to begin work on the strips of white ash used for the frames. "I've tried to follow traditional hand techniques as much as possible because I like working with hand tools, but I've adapted to modern materials."

Carl's snowshoes begin as a 10–14"-diameter white ash tree growing on the sloping acreage behind his house. He fells the ash in the fall or winter, when the sap's down, then halves and quarters the log on-site. Each quarter will eventually be split to yield several 5½–10'-long pieces. He prefers working wood as green as possible, so he doesn't split the quarters until he's ready to build the shoes.

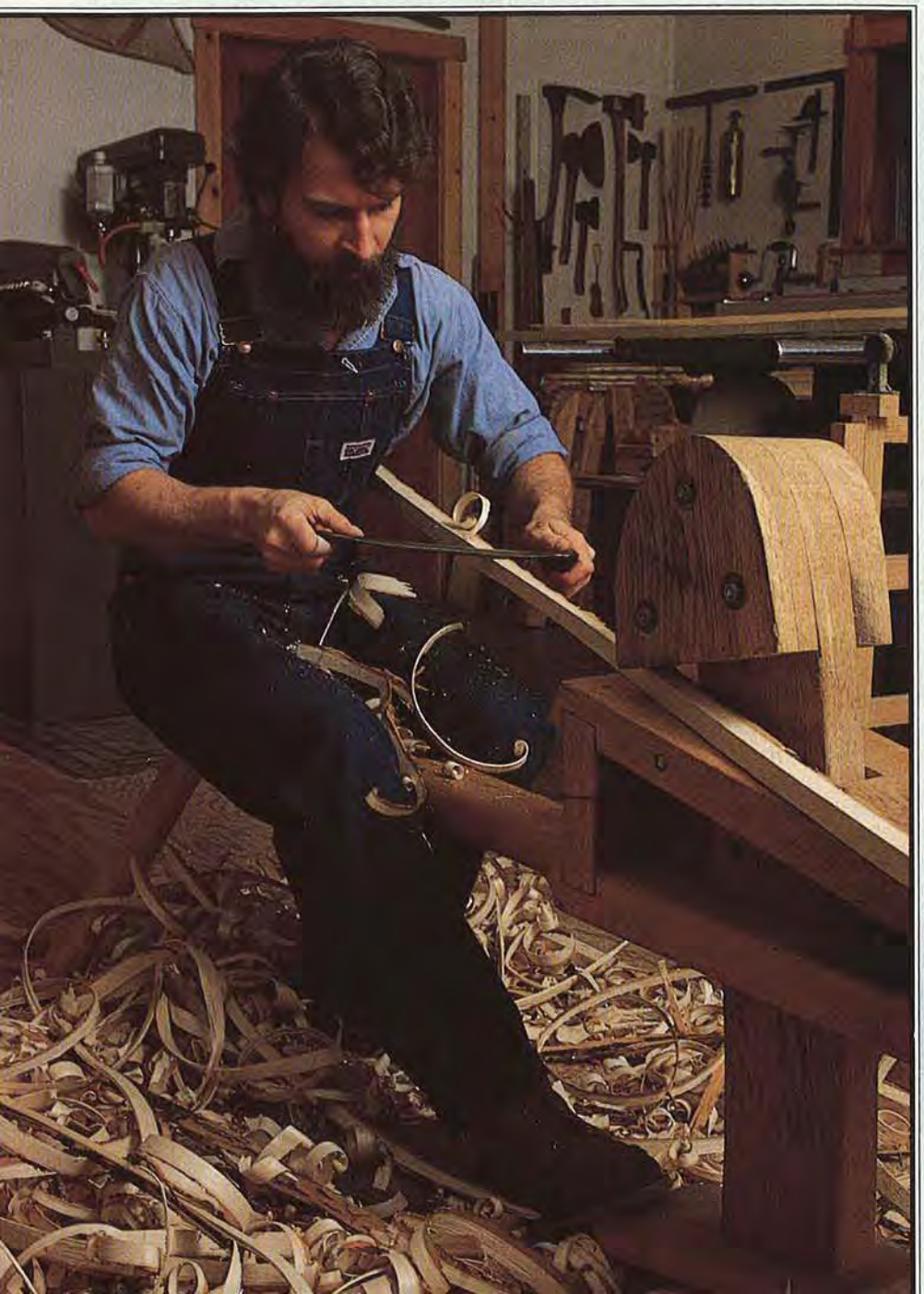
Carl keeps the wood moist by storing it off the ground in his dirt-floor basement. When it's time to make a four- or five-pair batch, Carl hauls up the quartered ash and splits it. "Instead of stripping the bark at this stage, I leave it on to hold the moisture in," Carl advises. "I peel off the outer bark on the shaving horse."

Sitting astride the shaving horse, shown *left,* Carl begins forming the rough 1½×1½" ash strips into snowshoe frames. Following contours for the inside of the frame that he pencils on the wood, he draws the blade to himself time and again, removing shavings. When half the length has been shaped, he reverses its position to work the other half. After shaping the entire length, taking the wood down to just about ¾", Carl turns the strip over and at last removes the remaining bark from what will be the frame's outside edge.

During the contouring, a kettle of water heats on the cookstove. Now, steam pours from its neck.

Carl inserts the hard-rubber connection tube at one end of his steaming box to the whistling kettle. After adjusting the box on its stand, Carl opens the loading end and inserts the contoured strips, "They should steam an hour," he says, closing the box tightly. "Meanwhile, I'll shape frames."

At his workbench, Carl picks up a bent and glued frame. With a crooked knife, he starts the tedious work of rounding the ash's inner and outer edges. "I made the knife myself from an old file," he comments, "and it works better than a spokeshave."



At the shaving horse that he built, Carl shapes the splits of green ash that will be steam-bent into snowshoe frames. He contours the inside of each frame with a drawknife so that it will have strength where needed, but no extra weight. Note the array of hand tools hanging above the workbench.

Following a 10-minute session with the frame, Carl sets it aside and picks up another. When he has shaped several pairs, he moves them down to the vise at the end of the bench.

"This is the power-tool part of making snowshoes," Carl chuckles, pointing to an electric drill and a Dremel Mototool. "I drill through the frames for the lacing holes. Then, again with the Mototool, I do the recesses around them for the laces and the mortises for the crossbars." Shallow recesses in the frame protect the laces. And the mortises for the pared-down crossbar ends, just large enough for a snug fit, don't unnecessarily weaken the frame.

Ash around the bend

"Pretty much, wherever snowshoes are made, they're of white ash," says Carl, "because ash has strength, pliability for bending, and light weight. Laminated wood tends to crimp when you're making the compound bend. Remember, you're not just bending the wood around, but turning it up at the tips, too."

Ready to open the steaming box, Carl dons heavy gloves, then pulls out a strip of now-flexible ash, closes the box, and steps to a form. Kneeling now, he places the ash strip on the form and bends it around, the ends finally joining in a scarf joint at the heel. A few wedges seat the wood. "The frames stay in the forms two weeks," says Carl.

Lacings for the snow

For a finish, Carl brushes on several coats of exterior polyurethane, getting it in the mortises. Only where the scarfed ends of the frame join at the heel does he apply glue—a few dabs of epoxy, then a wrap of fiberglass thread to shield and strengthen the joint. The crossbars, fitted into their mortises, will be held in place by the shoe's taut lacing. And lacing accounts for nearly half of a snowshoe's construction time.

Carl's first variation from the traditional rawhide lacing was nylon-reinforced neoprene. "It doesn't stretch, sag, or gather moisture," he says. Then, for the middle section of the shoe that gets a lot of wear, Carl went to urethane lacing, and found that it lasted three or four times longer than neoprene. Now, on snowshoes destined for extensive use in extreme mountaineering conditions, Carl matches urethane centers with Hytrel-coated wire in the toe and heel sections. But, no matter the lacing material, the process always remains the same. "It's almost like chair caning," Carl notes, "with the bent frame and the crossbraces supporting the web of lace in the toe, midsection, and heel."

As each shoe comes together—the woven laces of space-age neoprene, Hytrel-coated wire, and urethane with pale ash—thoughts of trekking the high country accompany the rhythm of his hands. Sergeant Preston isn't his inspiration now.

SEND FOR A SNOWSHOE BROCHURE

For a copy of Carl's 1992 brochure, send a self-addressed, stamped, business-sized envelope to: *Carl E. Heilman II, Route 8, RR1, Box 213A, Brant Lake, NY 12815-9743.*

Written by Peter J. Stephano
Photographs: Jerry Irwin
Illustration: Mike Martis
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MORTISE-AND-TENON

The no-frills, no-nonsense way

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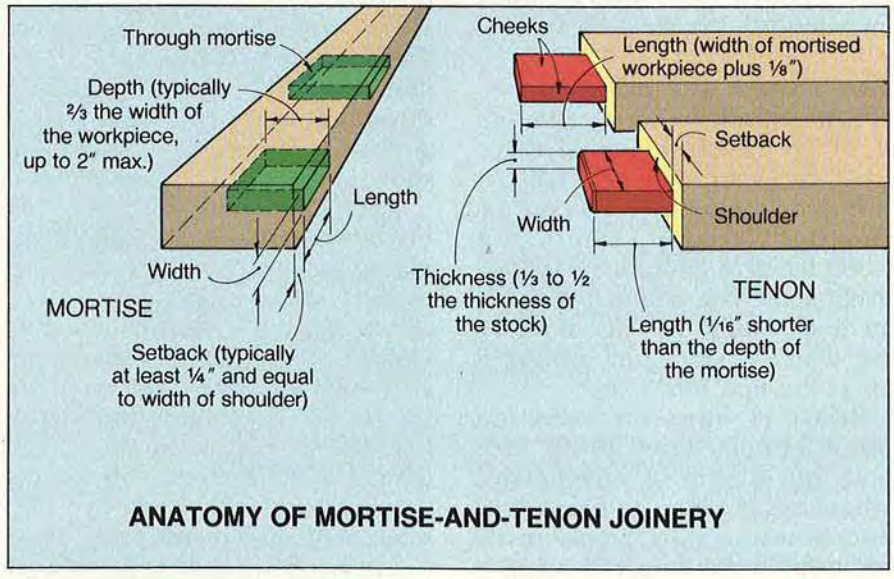
Most four-shouldered tenons, such as the example in the *foreground* of the illustration at *right*,


Through mortise
Depth (typically ⅔ the width of the workpiece, up to 2" max.)
Length
Width
MORTISE
Setback (typically at least ¼" and equal to width of shoulder)
Cheeks
Length (width of mortised workpiece plus ⅛")
Setback
Shoulder
Width
Thickness (⅓ to ½ the thickness of the stock)
TENON
Length (1/16" shorter than the depth of the mortise)

ANATOMY OF MORTISE-AND-TENON JOINERY

stop short of going all the way through the mating workpiece. Sometimes, a project calls for *through tenons* such as the one shown in the *background*. These joints require a few extra steps, which we'll describe later.

First things first—make the mortise

For tight-fitting mortises and tenons, it's important that you always cut a mortise *before* producing the mating tenon. To get started, lay out the position of the mortise on the workpiece according to the guidelines shown in the Anatomy of Mortise-and-Tenon Joinery drawing on the *opposite page*.

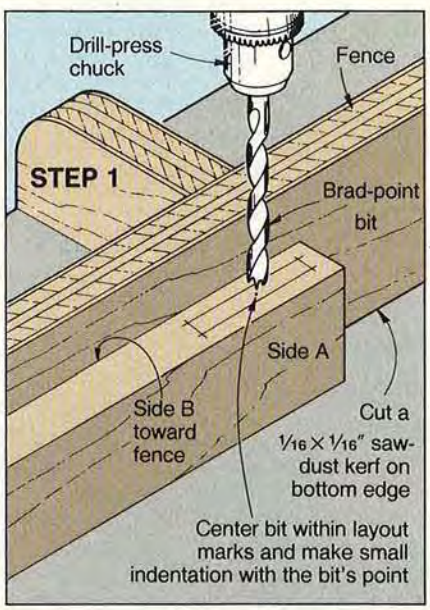
***Note:** Mark the face sides (usually the faces with the best color and grain) of all your workpieces. Why? It's vital that you have the correct face against the fence or table at all times.*

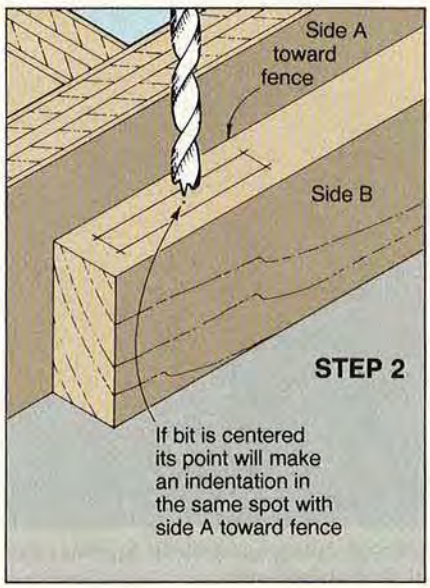
To cut the mortise, mount into your drill press a brad-point bit that's the same diameter as the width of the mortise. Center the bit within the intended mortise as shown in the two-step drawings at *left* and *left bottom*.

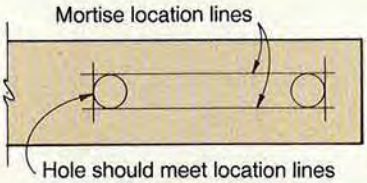
Set the bit for the necessary depth of cut. With the face side of the workpiece toward the fence, bore a hole at each end of the mortise, as shown in the drawing *below*. Be careful to cut just up to the ends of the mortise. Now, replace this bit with another that is 1/16" smaller in diameter than the width of the mortise. Set this bit for the same depth of cut as the larger bit, and make a series of holes between the two larger holes as shown at *bottom center*. Drill the holes so they just touch or have a small gap between them. If they overlap too much, the drill bit may deflect and cut a wider mortise than desired.

With a sharp, wide (1" or so) chisel, shear away the stock along the long sides of the mortise to a depth of about 1/4" as shown *below*. With another chisel that's as wide as the mortise, remove the stock from the ends of the mortise as shown at *bottom*. Repeat this

Continued


Drill-press chuck
Fence
STEP 1
Brad-point bit
Side A
Side B toward fence
Cut a 1/16 × 1/16" sawdust kerf on bottom edge
Center bit within layout marks and make small indentation with the bit's point


Side A toward fence
Side B
STEP 2
If bit is centered its point will make an indentation in the same spot with side A toward fence



With a bit 1/16" smaller than the end holes, drill a series of connecting holes.

Use a wide chisel and mallet to cleanly shear the mortise walls.

With a chisel of the same width as the mortise, clean up the mortise ends.

chiseling procedure until you have reached the desired depth.

For through tenons, use the procedure described on *page 39* to chisel down to about half the depth of the mortise, then flip the stock over. Using the exit side of the drilled holes as a guide, lay out the mortise on the opposite side of the stock. Now, complete the chiseling from this side. This way, the tenon will fit the exit side of the mortise just as closely as it does the entrance side.

Now, it's tenon time

First, mark the length of the tenon on one face of the stock. Remember, the length of the tenon should be 1/16" *shorter* than the depth of the mortise. (If you're cutting a through tenon, it should be 1/8" *longer* than the width of the mortised workpiece so you can sand it flush later.)

Now, mount a dado blade or set adjusted for a maximum-width cut (normally about 13/16") into your tablesaw. With your mortised workpiece *facedown* on the top of your tablesaw, check the height of the dado blade or set against the mortise as shown *below*. The tips of the teeth should just reach the mortise.

To double-check your height adjustment, cut two 1/4"-wide shoulders along the end of your tenon stock. Check the fit of this mini tenon with its mating mortise as shown *below*, and adjust your dado blade or set up or down accordingly. Because through tenons have exposed ends, make these test cuts in a scrap piece of the same thickness as your through-tenon stock.

Attach to your miter gauge an auxiliary fence that's at least as long and high as the length and width of your tenon stock. Attach this fence so it extends at least 5" past your dado blade or set.

Hold your tenon stock against this fence and align the length-of-tenon mark with an outside tooth of your dado blade or set as shown *below*. Butt a stopblock (with a small sawdust kerf cut into it) against the end of the tenon stock and clamp it in place. With a square, make sure that the butting surface of the stopblock is square to the saw table. Likewise, the end of the tenon stock must be square. Now, butt the workpiece against the stopblock and cut all four cheeks of the tenon as shown in the photo at *bottom*.

Check the width of your mini tenon before cutting the full tenon.

Align the mark on your tenon stock with the outside dado blade.

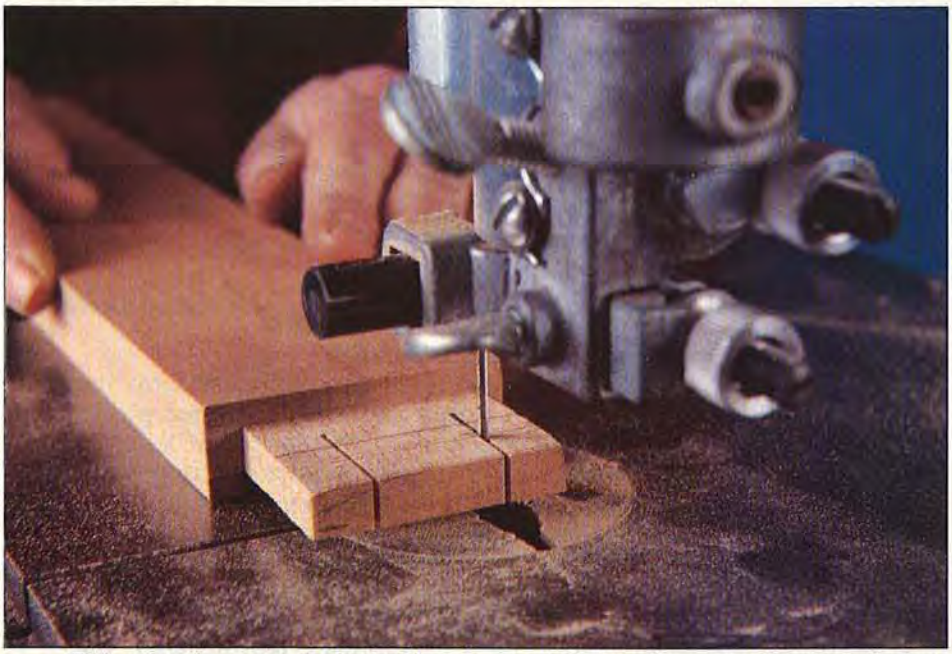
Lay your mortised workpiece on the top of your tablesaw and adjust the height of the dado blade or set according to the setback of the mortise.

After clamping a stopblock in place, cut all four shoulders.

Ready the tenon for insertion into the mortise

For a smooth fit, sand slight chamfers on the ends of the tenon as shown in the Anatomy of Mortise-and-Tenon Joinery drawing on page 38. (Skip this step for through tenons.) This serves two purposes: 1)You can fit the tenon more easily into the mortise, and 2) You can insert the tenon fully, obtaining a tight joint line without interference from any small debris remaining in the mortise's bottom corners.

Before applying glue, test-fit the mating workpieces and sand or chisel the pieces as necessary.



With a bandsaw, cut wedge-holding kerfs parallel to the tenon cheeks and about three-quarters the length of the tenon.

After cutting narrow wedges with your bandsaw, gently tap them into place.

After applying glue to the dowel, tap it into place, saw it, and sand flush.

Brush woodworker's glue onto the four faces of the tenon and the walls of the mortise. Clamp the workpieces together and allow the glue to dry completely. Scrape away the squeezeout after a tough skin forms.

How to clean up the joint

No matter how carefully you machined the mortises and tenons, chances are the face sides of the mating workpieces will not align perfectly flush. To bring these surfaces flush, we prefer to do the job with a random-orbit sander (working through a succession of grits) or a scraper. No matter which method you choose, be careful to avoid cross-grain scratches. If you made through tenons, you'll need to saw and sand the ends of the tenons flush with the mortised workpiece.

Making the strongest of joints even stronger

Before modern adhesives, craftsmen depended upon various mechanical means to solidify mortise-and-tenon joints. Today, you can try one of the two methods described here to increase strength or to add a nostalgic look to your projects.

To beef up a through tenon, bandsaw two kerfs into the tenon as shown at *top left*. Apply glue to the tenon and insert the tenon into the mortise. Brush a small amount of glue onto two tiny wedges and drive them into the kerfs as shown at *bottom left*.

You also can pin a tenon in place with a dowel. First, glue, assemble, and clamp the mortise-and-tenon joint. After the glue dries, drill a centered hole completely through the mortised stock and the tenon. Apply glue to the dowel and tap it into place as shown at *bottom right*. Saw off the dowel and sand it flush.

Written by Bill Krier with Jim Boelling
Photographs: John Schultz
Illustrations: Kim Downing; Mike Martis; Bill Zaun

STICKLEY—

AN ADAPTATION FROM THE CRAFTSMAN ERA

Stout legs, wedged joinery, and an overall look of sturdiness describe the furniture creations of Gustav Stickley, a leader of the Arts and Crafts movement in the early 1900s. Featuring those characteristics, our stylish oak plant stand measures 35" tall, and fits into decorator schemes from mission to contemporary.

Laminate the legs, and form the mortises

1 Laminate stock face-to-face to form the 2"-square legs (A). (We cut three pieces of ¾" stock to 2¼" wide by 36" long for each leg. Then, we glued and clamped the pieces, with the edges and ends flush. We scraped the excess glue from one edge of each leg, planed that edge smooth, and ripped the opposite edge for a thickness slightly over 2". We then planed the cut edge for a 2" finished width. Next, we planed an equal amount—about 1/16"—off both faces of each leg for a 2" finished thickness. We planed both edges to keep the joint lines centered. Finally, we crosscut the legs to length.)

2 Mark "outside" and "inside" on two opposing surfaces of each leg, and then mark the location for the through mortise on these surfaces where dimensioned on the Leg drawing on *page 44*. Mark the kerf location on the top of each leg.

3 Fit your tablesaw with a ¼" dado blade, and raise the blade 2" above the table surface. As shown in the photo on *page 45*, cut a ¼" kerf 2" deep in the top end of each leg where marked.

4 Chuck a ⅝" brad-point drill bit into your drill press, and bore two overlapping holes inside the marked mortise locations to remove some of the excess stock. Now, use a sharp chisel and mallet to square out each mortise from both sides. (For more information on mortise and tenons, see the technique article on *page 38*.)

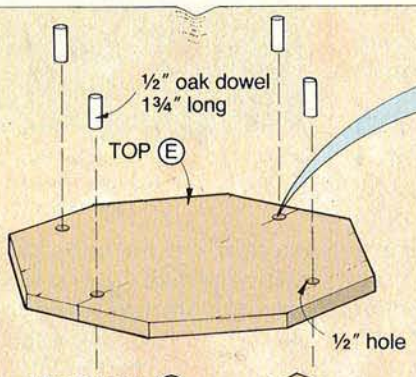
Continued

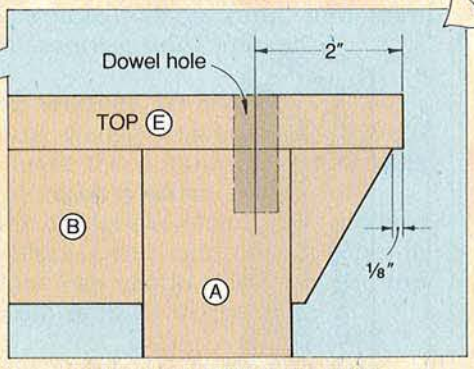
-STYLE PLANT STAND

Bill of Materials						
Part		Finished Size*			Matl.	Qty.
		T	W	L		
A*	legs	2"	2"	35"	LO	4
B	upper rails	¾"	2"	14¾"	O	2
C	lower rails	¾"	1⅜"	13¾"	O	2
D*	wedges	¾"	⅝"	13½"	O	4
E*	top	¾"	15"	15"	EJO	1

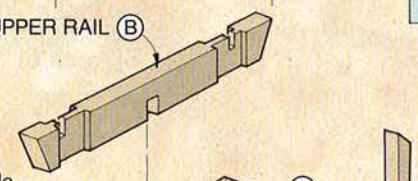
*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

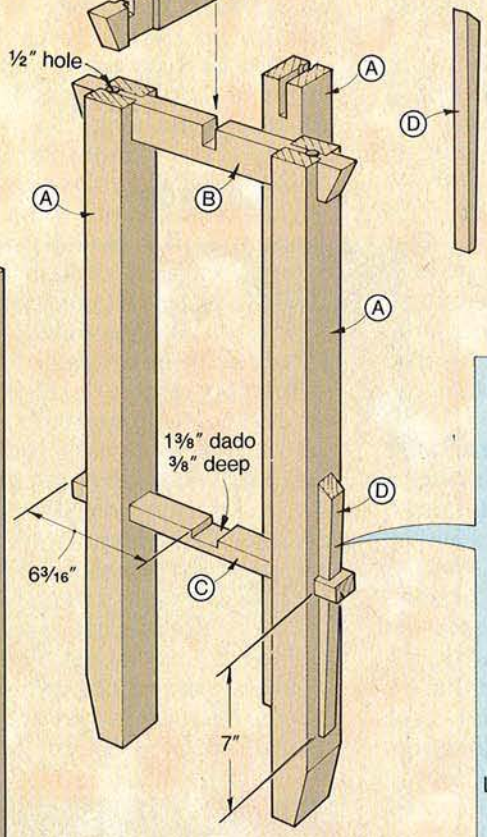
Material Key: LO—laminated oak, O—oak, EJO—edge-joined oak.



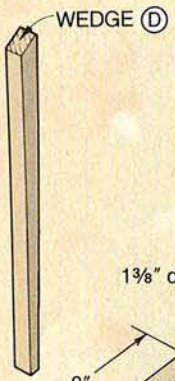


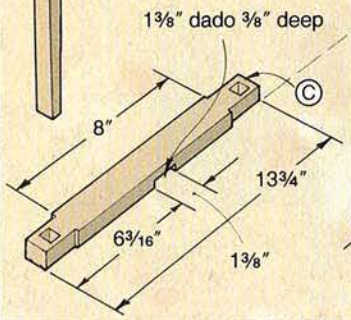
DOWEL HOLE DETAIL

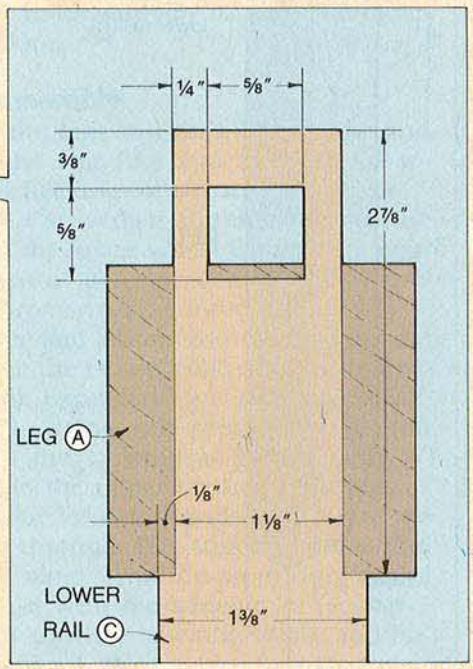




EXPLODED VIEW

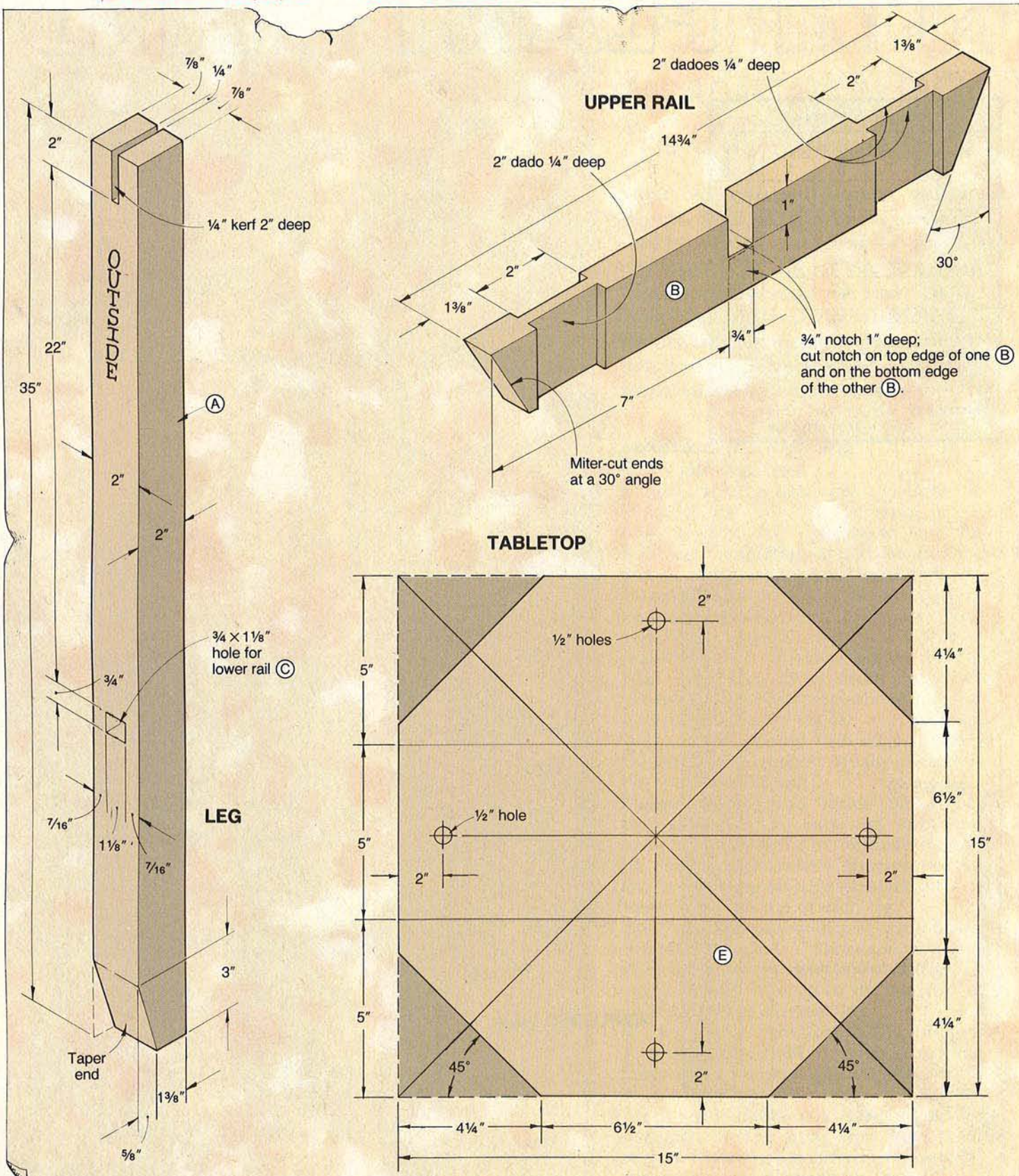






WEDGE HOLE DETAIL
TOP VIEW

STICKLEY—STYLE PLANT STAND



Using a dado blade, tall auxiliary fence, and a pushblock clamped to the leg, cut a ¼" kerf 2" deep in the top end of each leg.

5 Mark the taper location on the bottom outside edge of each leg. Bandsaw the taper to shape, and then sand the cut area smooth to remove the saw marks.

Add the rails for support

1 Cut the upper and lower rails (B, C) to the sizes listed in the Bill of Materials.
2 Mark the dado and notch locations on the upper rails where shown on the Upper Rail drawing. When marking the layouts, note that the ¾×1" notch is cut in the top edge of one upper rail and in the bottom edge of the other.
3 Fit your tablesaw with a ¾" dado blade, and raise it 1" above the tablesaw surface. (We test-cut notches in ¾" scrap stock first to ensure a tight fit between the two pieces.) Cut a ¾" notch 1" deep in each upper rail where marked.
4 Lower the dado blade and cut a pair of 2" dadoes ¼" deep, 1⅜" from the end of each upper rail as shown in the photo *below*. (We test-cut scrap stock first to ensure a tight fit in the kerfs in the leg tops.)
5 Miter the ends of each upper rail at 30°.
6 Mark the dado, mortise, and shoulder locations on each lower rail where shown on the Exploded View drawing and accompanying Wedge Hole detail.
7 Using your dado blade, cut ⅛" notches 2⅞" long where marked to form a pair of shoulders on each end of each lower rail. Check the fit of the lower rails through the mortises.

Mark the layout lines, and cut (in several passes) a pair of 2" dadoes ¼" deep in each upper rail.

8 Next, cut a 1⅜" dado ⅜" deep in each lower rail where marked to form the mating half-lap joints.
9 Drill a blade-start hole, and cut the wedge holes to shape with a scrollsaw, or drill a ½" hole in the middle of the marked wedge-hole location, and then chisel the mortise sides square.

Cut the wedges to shape

1 Using the wedge drawing at *left* for reference, mark the outline of four wedges onto a piece of ¾"-thick stock.
2 Cut the wedges to shape (we did this on a bandsaw), and sand the cut edges to remove the saw marks. Miter-cut the top and bottom of each wedge at 45°.

Edge-join stock to form the top

1 Rip and crosscut three oak boards 5⅛" wide by 16" long from ¾"-thick stock for the tabletop (E).
2 Glue and clamp the boards edge to edge, matching the grain best as possible.
3 Remove the clamps, scrape off the excess glue, and trim the edge-joined tabletop blank to 15" square.
4 Using the Tabletop drawing for reference, mark the tabletop outline onto the edge-joined stock. Miter-cut the corners where marked.
5 Lay out the dowel-hole locations on the tabletop (E) where dimensioned, and drill ½" holes through it. Sand the tabletop smooth.

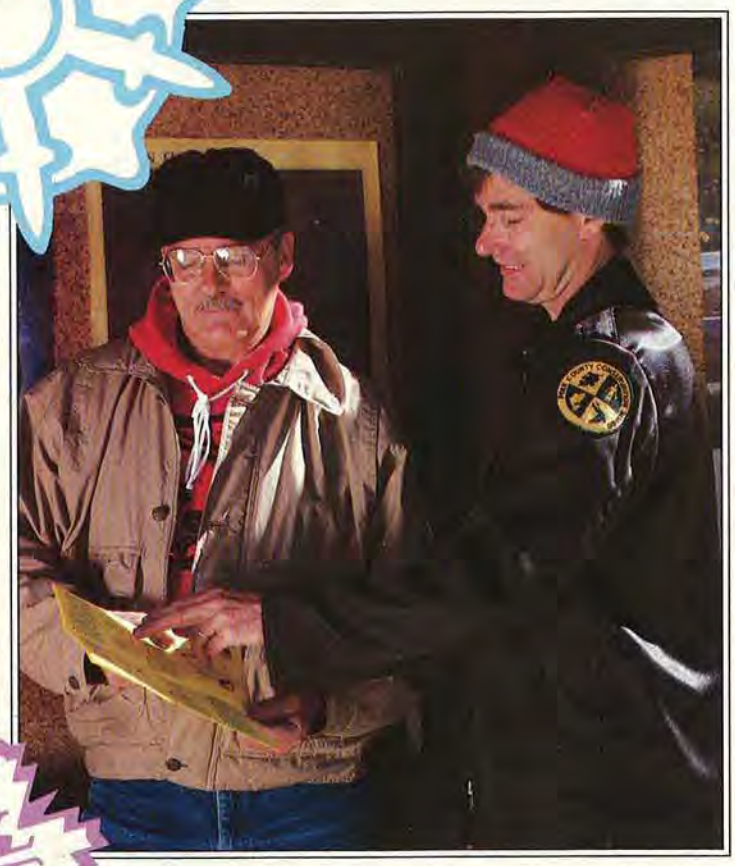
Final assembly

1 Sand the legs and rails. Then, glue and clamp the legs (A) and rails (B, C) together, checking for square.
2 Drive the wedges through the mortise holes in the lower rails. (We added a couple drops of glue to each wedge to prevent it from working loose.)
3 Center and clamp the tabletop to the base (see the Dowel Hole detail accompanying the Exploded View drawing for reference). Using the previously drilled holes in the tabletop as guides, drill ¾" deep into the upper leg ends and rails.
4 Cut four ½" oak dowels to 2". Glue the dowels through the tabletop holes and into the stand. Trim the protruding dowel ends flush with the tabletop surface.
5 Finish-sand the assembly. Stain and finish as desired.

Produced by Marlen Kemmet
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun

WEDGE
SIDE VIEW

Miter-cut ends at a 45° angle



Learn to identify your native TAKE A WINTER

Most folks walk the woods when the weather suits them best: in spring, when the fresh beginnings of the year's growth sprinkle the forest with fragrance and hints of green; in summer, under the canopy's inviting coolness; or in fall, as nature reveals her palette. Yet, winter happens to be the time to really get to know your native trees. For it's then, when the leaves have dropped and the undergrowth has faded, that hardwoods stand out, waiting to be recognized. Late last winter I discovered just what there was to learn on a walk in the woods.

Peter J. Stephans
Senior Editor

Print this article

It really doesn't matter where you call home—city, suburb, small town, or farm—there's probably a stand of trees somewhere close by. Cities have parks, suburbs protect greenbelts, and counties establish forest preserves. A call to your city parks department or county conservation board will direct you to a likely area for your first venture into winter tree identification. Ask for directions to the spot with the greatest diversity of species. In some areas, you may even find scheduled weekend nature hikes, guided by a forester or naturalist, to get you started.

Research for this article took me to Brown's Woods, a 500-acre county forest preserve not more than a 10-minute drive from *WOOD®* magazine's Des Moines offices. There, I was met by Polk County Conservation Board naturalist Larry Totton, *above*. An experienced woodland guide, he regularly takes local groups on nature hikes year-round.

Winter's telltale details

"The way I identify trees at any time of year," explained Larry, "is by remembering the most obvious characteristic for that particular tree rather than trying to add all the clues up at once, such as the shape, the bark, the twigs, and so on." On our walk, depicted in the photographs on this and the following pages, he showed me what he meant. For instance, I was shown the telltale bark of the honeylocust with the thorns on it, the peeling bark of the shagbark hickory, the red buds of the basswood, and the opposite branching of the ash.

On our morning hike, we spotted about 15 species of hardwoods. First, we walked through what Larry called "upland timber." For west central Iowa, the trees were a typical balance of red and white oak, hickory, basswood, cherry, elm, hackberry, and honeylocust, with a few walnuts and Osage-orange trees thrown in. Later, as we entered the bottomland near the Raccoon River, the mix turned to species that thrive in more moist conditions—cottonwood, boxelder, and silver maple. In between, we found a stand of small ironwood (Eastern hophornbeam). Larry had his own dependable way to recognize each, and I slowly learned to follow his guidelines.

"In the winter," he said, "you primarily rely on bark, buds, and twigs for identification." Bark, as it turns out, becomes a distinctive clue in separating the two groups of oak—red and white. White oak always displays patches of lighter-colored bark on its trunk, caused, as I was told, by a parasitic fungus. On close inspection, you can even see the tiny white specks of this innocent parasite, as in the photo *right*. Red oak, on the other hand, has thick, deeply ridged

hardwoods after their leaves have fallen

WALK IN THE WOODS

bark that seems to run up the tree in stripes, much like those of a tiger cat.

But, there's one oak that sometimes defies categorizing by bark alone—the bur oak. To finally place this oak tree in the red family, Larry dug through the debris at its base. "The bur oak has larger leaves than other oaks, red or white, and they're shaped like a spatula," he said as he picked up a fallen, brown sample to show me, as shown *right*. Then, for further proof, Larry found an acorn. "See its fuzzy little cap?" he asked me. "Only the acorn from the bur oak has a fuzzy cap. Remember it this way: When it's cold outside—brrr—you put on a cap. That'll help you identify bur oak."

Besides the oaks, other trees with outstanding bark seen on our hike included shagbark hickory, which takes its name from shaggy, peeling bark; walnut, with its dark brown, furrowed covering; black cherry with its scales; and Osage-orange with its burnt-orange glow. The photos, *right* and *below,* show some of these trees identified by their bark.

But bark can fool the eye, too, according to my guide. We saw young basswood trees with bark so smooth and grey they were easily mistaken for maple. That's when Larry told me about buds.

"When in doubt, you can pick out basswood by its buds," he said, reaching up to bend a small branch down to eye level. There,

A closeup of a white oak's patchy area reveals the parasitic fungus responsible.

Befuddled by bark? Identify bur oak by its large leaf and fuzzy acorn cap.

Even this young shagbark hickory displays peeling bark. It peels more at maturity.

The warm glow of Osage-orange's bark is hard to miss in the naked forest.

Black cherry has distinctive scaly bark. The large, thick vine is poison ivy.

Continued

TAKE A WINTER WALK IN THE WOODS

at the tip of a twig, was a red, BB-sized bud, shown *right*. "And, they're edible," Larry added as he bit the bud from the twig.

That basswood bud led the discussion to twigs, another aspect I'd thought little about. "Dogwoods, maples, and ashes, and that includes boxelders, feature opposite branching and budding," Larry informed me (see drawing, *top right*). "That means that twigs and leaves come off a branch exactly opposite each other, crosslike. Most other trees have alternate branching, where the twigs and leaves are staggered."

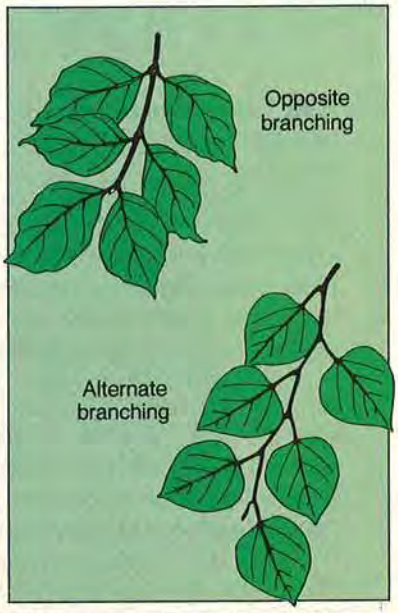
Later, paging through a tree-identification guide, I found out that buckeyes, catalpas, and horse chestnuts also feature opposite branching, but that's it among North American trees.

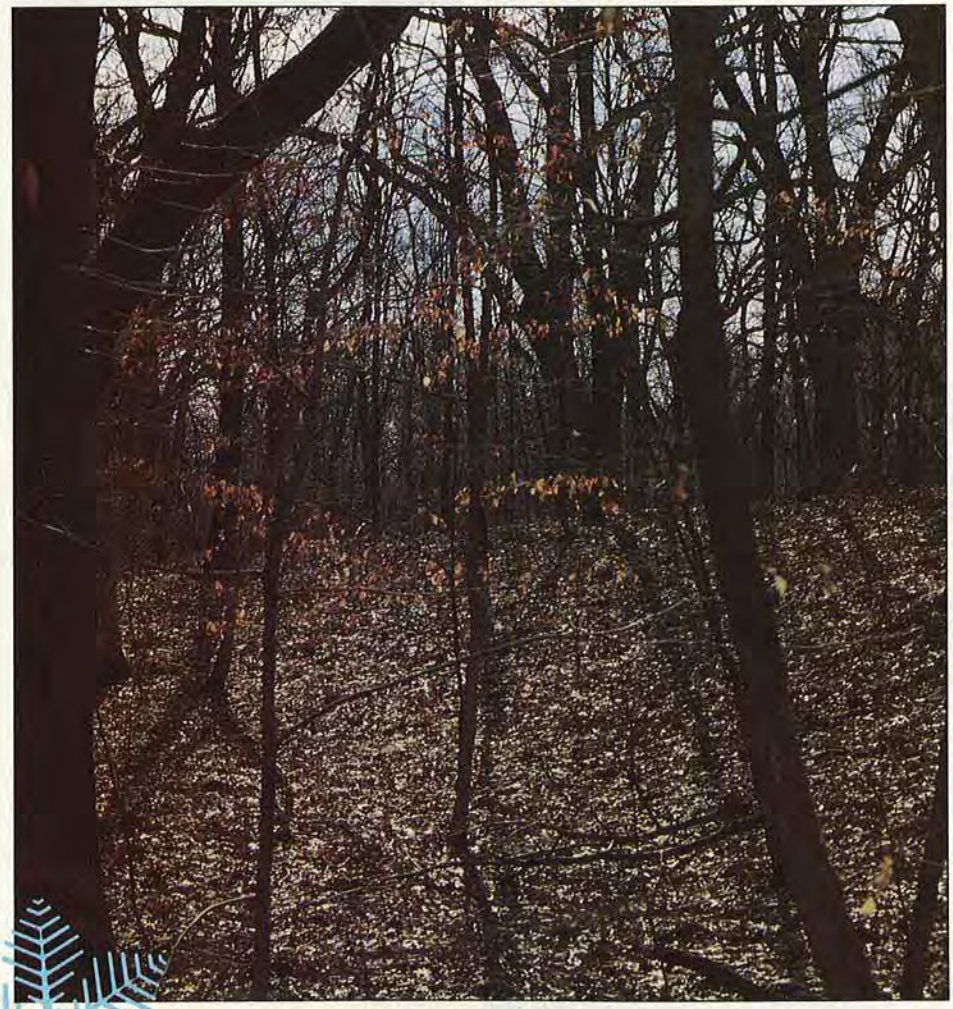
During my walk, I accumulated more knowledge about twigs. I saw that honeylocust and Osage-orange trees have twigs armed with prickles or thorns. From reading, I learned that the taste or smell of a twig helps in identification, too. Black and yellow birch twigs hint of oil of wintergreen. A strong bitter-almond flavor identifies black cherry, and slippery elm and basswood twigs are gummy.

Trees laid bare

In our wandering, it became obvious how much easier it is to see the whole forest when the leaves have fallen. With the woods

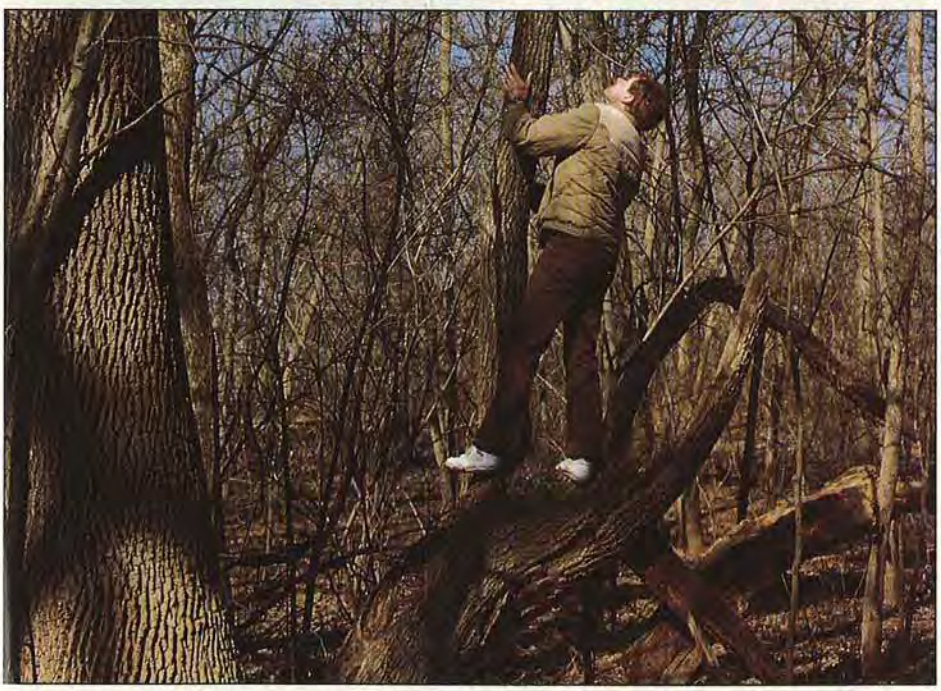
Basswood, the carver's popular choice, gives itself away by its tiny, edible bud with a nutty taste.





Hophornbeam, or ironwood, a small understory tree in most of the Midwest, carries some golden leaves all winter.

A lonely American elm, recognized by its almost perfect vase shape, has so far avoided destruction by the infamous Dutch elm disease.



Larry checks on a boxelder growing in the river bottoms. In the maple family, boxelder has opposite branching, and sports purple twigs.

in such a state of nudity, you can quickly pinpoint any aspect of the stand or any tree in it.

"That's ironwood out there," Larry said, pointing to the slope beyond a frozen streambed. "Ironwood always carries some golden leaves through winter."

We also were fortunate to sight one of the few remaining American elms in our area. Somehow, it had so far escaped disease. "A beautiful vase shape," Larry declared. Some trees, he said, have distinctive shapes; and the American elm is the best example.

As Larry and I walked, the naturalist made frequent observations, pointing out things that made the excursion even more interesting. And it's these same types of discoveries that make a wintertime outing a great family experience (and inexpensive, too). For instance, we saw a hollow red oak that Larry said harbored a nest of white-footed mice. Then there was the bee tree, a basswood hollow to the core. "In the spring, you can hear the bees hum in there from a long way away. Bees love basswood blossoms," he said. "Now, though, the bees are still in a long winter nap."

Get to know your trees

Check with your university extension service for information on tree identification. Also, you'll find these books helpful:

- *The Illustrated Book of Trees*, Wm. Carey Grimm, 1983, Stackpole Books, Harrisburg, Pa., $19.
- *Field Guide to Northern American Trees,* Elbert L. Little, 1980, Alfred A. Knopf, New York, $12.

Written by Peter J. Stephano

Photographs: John Hetherington, Peter J. Stephano

FOR PROJECTS THAT HINGE UPON THEIR GOOD LOOKS WOODEN

Hold on! Before you run out to buy some brass hardware for your next project, stop and consider a short trip to your scrapwood bin instead. You can resurrect these scraps as wooden hardware more elegant than anything store-bought.

We'll show you how to build and install the wooden hinge, lid support, and handles shown at *left* for the jewelry box on *page 56*. You can use these principles to create wooden hardware for your other projects, too.

***Note:** Wooden hinges and lid supports don't have the durability to work with furniture projects or large boxes such as hope chests, but they are strong enough for most projects smaller than a bread box (that aren't handled by young children). Remember that the hardware shown here is scaled for our jewelry box—for larger boxes you'll have to proportionately increase its size.*

FOR A GREAT OPENING ACT, TRY WOODEN HINGES

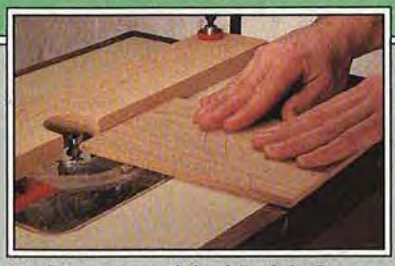
We'll show you how to make two hinges simultaneously, with enough stock left over to assemble a third one in case you make a goof. Be sure to use hardwoods, and sharp blades for accurate, splinter-free cuts.

Prepare the hinge blank

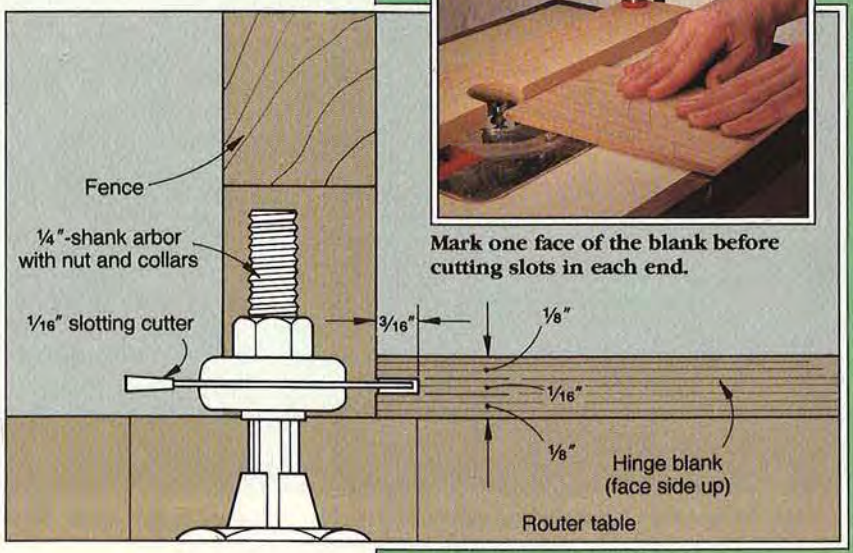
For safety's sake, cut the hinges from an oversized blank that's easy to grasp as you machine it. First, plane or resaw a 5¼×8″ workpiece to 5/16″ thick. (If you use a thickness planer, be sure to secure the workpiece with double-faced tape to a carrier board that's at least 12″ long.) Then, mark one face so that you remember to keep this face *up* during machining steps.

Chuck a 1/16″ slotting cutter (we used a Bosch No. 85506 2-wing cutter with a ¼″-shank work arbor) into your table-mounted router and adjust as shown *below*. Cut slots into both ends of the blank as shown *below*.

Cut a 1/16×5/16×10″ strip of the same wood species as the blank.



Mark one face of the blank before cutting slots in each end.



Print this article

HARDWARE

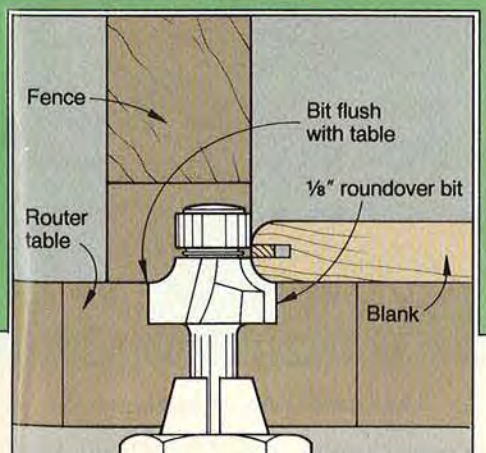
Cover the insert opening with tape and cut the strips on the side of the blade away from the fence.

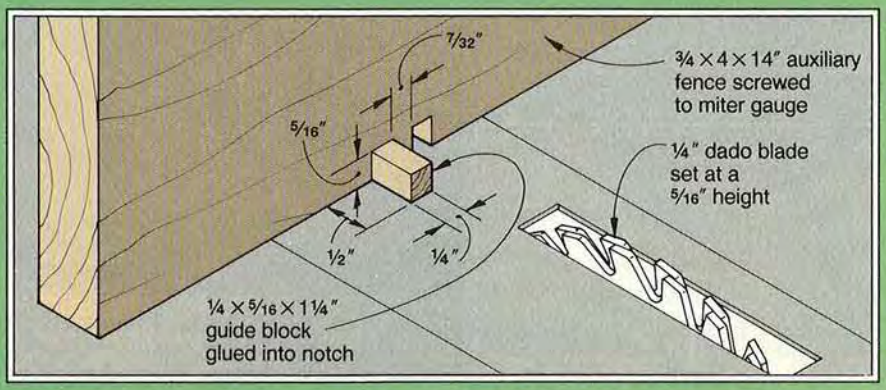
To prevent the strip from falling through the slot in your tablesaw insert, place masking tape over the slot as shown at *left*. Make sure that the strip fits snugly into the slots in the blank. If it does not fit, cut another strip.

Secure the blank on end in a bench vise, place a 1/16×6″ brass rod into the slot that's facing up, and apply woodworker's glue to both faces of the strip. With the help of a wood block, gently tap the rod and strip into the slot as shown at *right*. Carefully withdraw the brass rod and repeat this procedure on the opposite end of the blank.

Tap the wooden strip and brass rod into place with the help of a scrap of wood.

After the glue dries, trim the strip flush with the end of the blank. Mount a 1/8″ round-over bit into your table-mounted router and adjust it according to the drawing *below*. Round over both ends of the blank.





Put some fingers into the hinge blank

First, build a box-joint jig for your tablesaw's miter gauge according to the drawing *above*. Hold the blank against this auxiliary fence as shown *below*, and cut the first notch.

Set the blank against the box-joint jig's block to cut the first notch.

After completing the cut, remove the workpiece, pull the jig toward you, and slide the just-cut notch over the guide block in the jig. Cut another notch. Repeat this procedure to cut fingers along both edges of the blank.

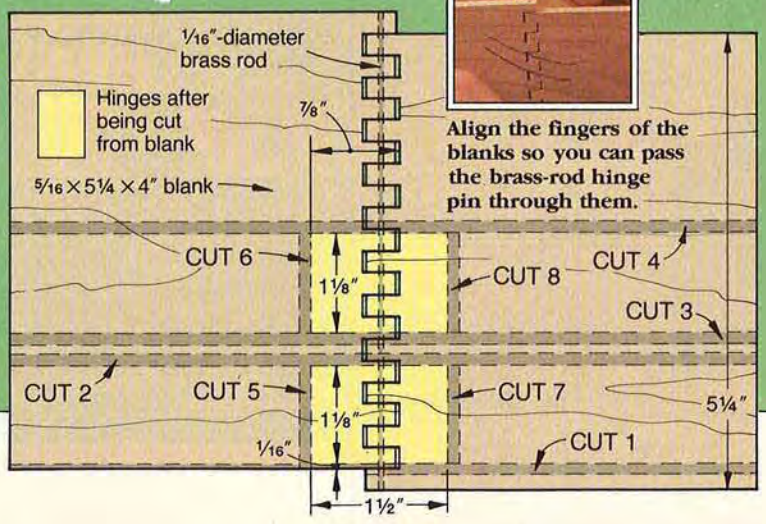
Cut the blank in half as shown at *right*. Mesh together the fingers of both halves, making certain that the marked faces are on the same side. Insert a 6″ piece of 1/16″ brass rod through the fingers as shown *below*.

After cutting fingers into both ends of the blank, crosscut the blank in half.

To cut two hinges from the blank you just made, follow the sequence of cuts in the drawing *below*. When making the ripping cuts (Nos. 1, 2, 3, and 4), slow the feed rate of the workpiece as you approach the brass rod. This prevents the rod from busting through the tiny strips that hold it in place.

Continued

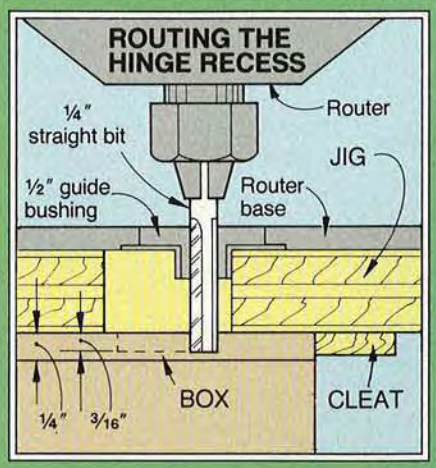
Align the fingers of the blanks so you can pass the brass-rod hinge pin through them.

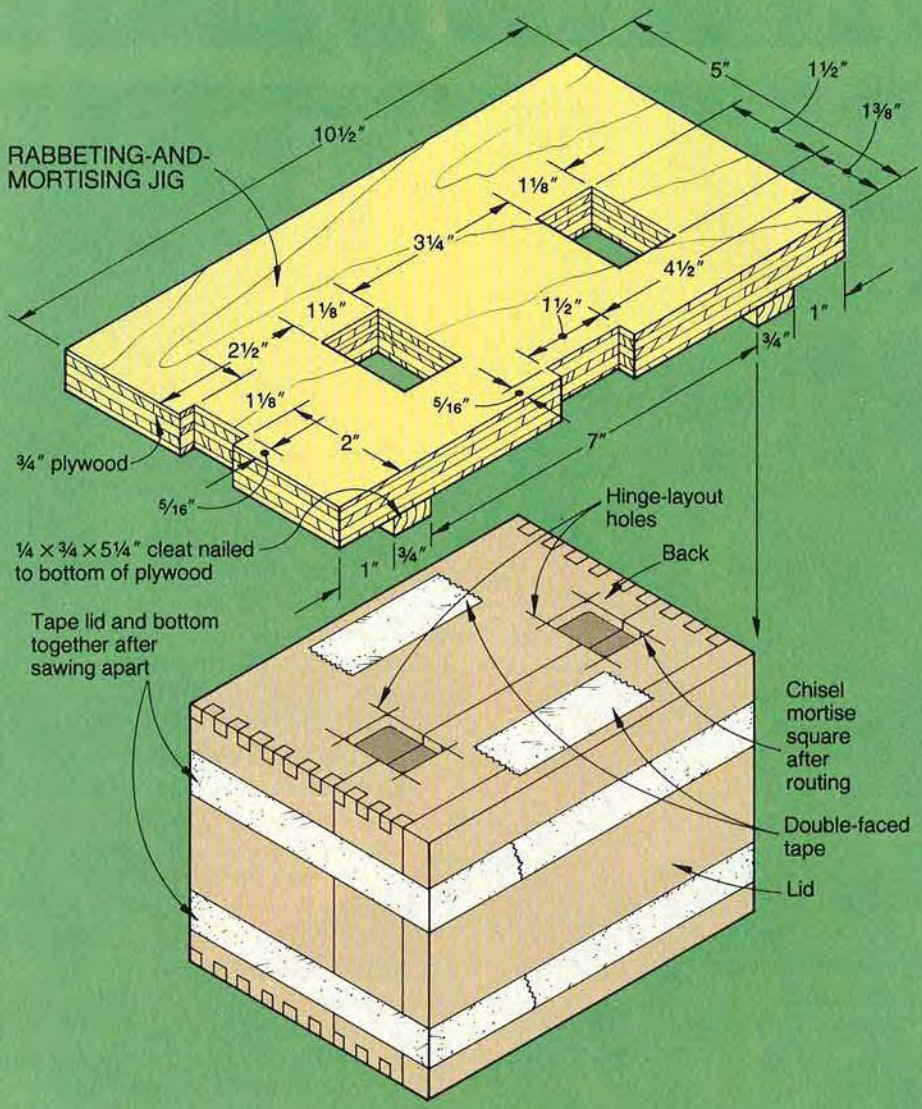


WOODEN HARDWARE

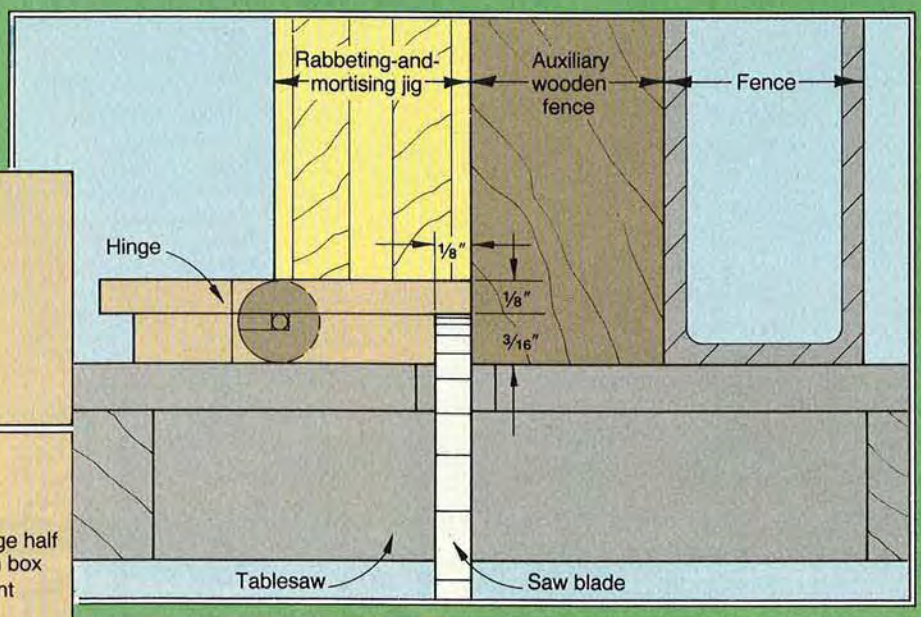
Cut the hinge rabbets

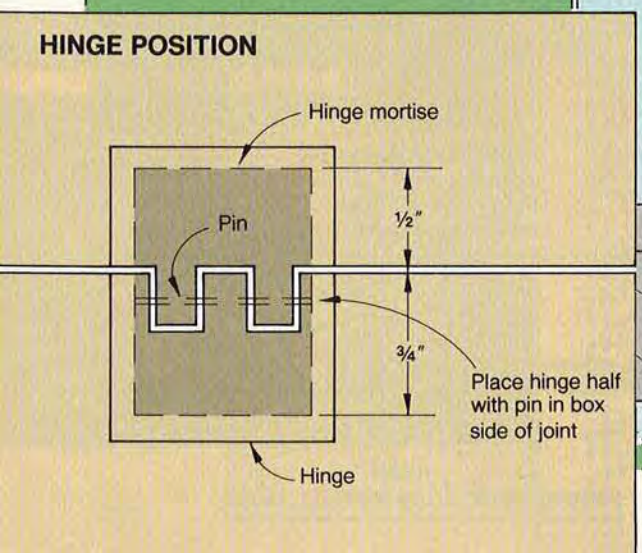
To conceal the hinges and secure them sturdily in place, you'll want to cut mortises. First, you'll need to rabbet the edges of the hinges, using the rabbeting-and-mortising jig shown at *right*.





After attaching an auxiliary wooden fence to your rip fence, raise your tablesaw blade (a carbide-tipped crosscut blade with 60–80 teeth works best) to a height of 3/16", and adjust the wooden fence alongside the blade as shown *below right*. Now, place the 1⅛"-long edge of the hinge into the 1⅛"-long notch in the jig, and cut a rabbet as shown on the *opposite page, top left*. Repeat this procedure for the opposite edge on the hinge. Then, place the 1½"-long edge of the hinge into the 1½"-long notch, and complete the rabbet cut along the remaining hinge edges.





Cut the end-grain rabbets first. Hold the jig and workpiece steady.

With a sanding block and 100-grit paper, gently round the top edges of the hinges so they look like the one on *page 50*.

Let's install the hinges

After cutting the lid from the box, tape the two halves together. Mark the hinge-layout lines so that the hinges are equally spaced from the sides of the box. As shown in the Hinge Position drawing on the *opposite page*, mark one end of the mortise ½" from the box cutline, and the other end ¾" from the cutline.

Apply double-faced tape to the box as shown in the drawing at *left*. Place the rabbeting-and-mortising jig onto the box so that the 1⅛ × 1½" "windows" center over the hinge layout lines.

Mount a ½" guide bushing and ¼" straight bit into your router and rout the mortises according to the drawing on the *opposite page, top left*. Clamp a support board to the end of your workbench and chisel the mortises square as shown *below*.

Support the back of the mortises when chiseling them square.

To secure the hinges in the mortises, apply woodworker's glue and tape down the hinges. Be sure to place the hinges as shown in the Hinge Position drawing on the *opposite page*.

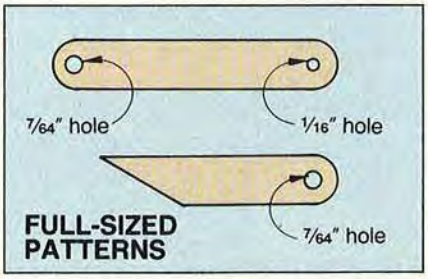
LID SUPPORTS GIVE YOU AN OPEN-AND-SHUT CASE

Besides just looking neat, a lid support prevents a box's lid from opening fully (which could tip the box backward or cause the hinges to break). As shown in the Exploded View *below*, you can make the lid support from six pieces of stock. (To see how the support works, turn to *page 56*.)

Cut and clamp the lid-support parts

Using the thin-strip ripping method shown on *page 51*, cut a 1/16 × ¼ × 10" strip. Crosscut the strip into the following lengths:

- Three pieces 1½" long (mark these with an "A").
- Three pieces 1¼" long (mark these with a "B").



Stack the three A pieces together, and the three B pieces together. Attach them to one another with double-faced cellophane tape. From the full-sized patterns *below*, apply Pattern A to the top piece of the A stack with spray fixative or double-faced tape. Do the same with Pattern B and the B stack.

With a belt or disc sander, round the ends of the stacks as shown *below*. Cut the B stack along the angled line. Separate the three pieces in each stack, and leave the patterns in place.

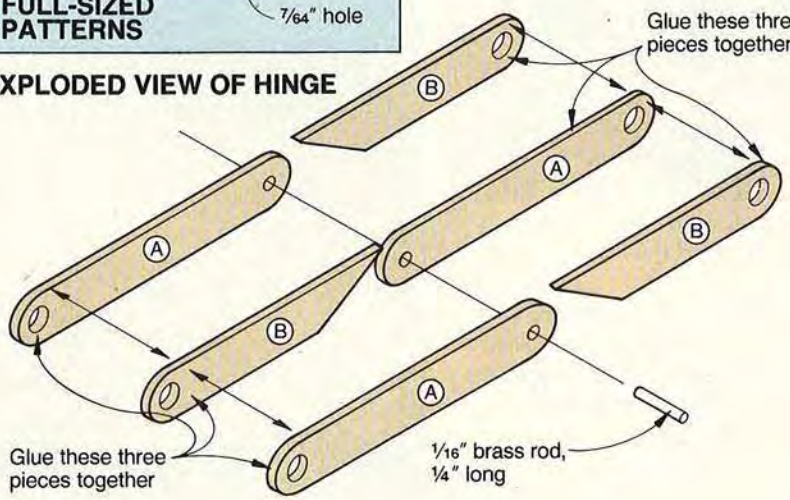
Round over the ends of the lid-support assemblies with a belt or disc sander.

Get your support together

Glue one part B between two part A's (with the A pattern facing out), and one part A between two part B's (with the B pattern facing out) as shown in the Exploded View drawing *below*. Clamp these assemblies with clothespins or binder paper clips as shown on *page 54, top*.

Continued

EXPLODED VIEW OF HINGE



WOODEN HARDWARE

Binder paper clips *(as shown)* and clothespins make good, inexpensive clamps for all your small projects.

After the glue dries, drill the 7/64" holes as marked on the patterns. Now, slide the two assemblies together and drill the 1/16" hole as shown *below.*

Align the rounded ends of the hinge to drill the hole for the brass pin.

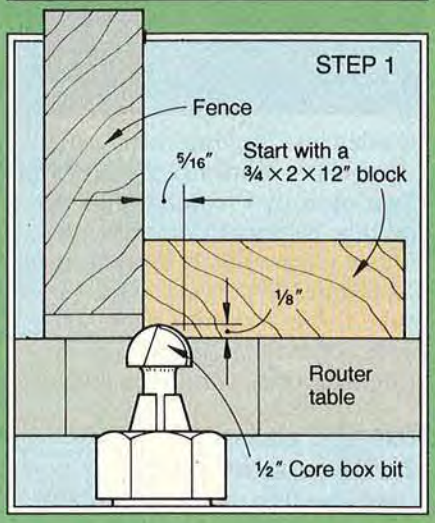
Insert a 1/16×1/4" brass rod through the 1/16" hole, and peen the ends as shown *below.* Make sure you set the pinned end on a metal surface. This "mushrooms" the ends of the pin to prevent it from sliding out.

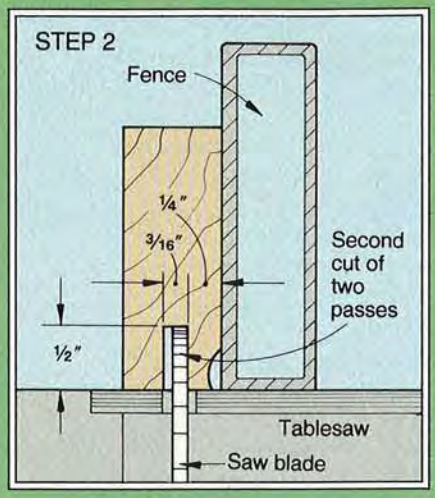
Peen the ends of the pin to prevent it from falling out of the hinge.

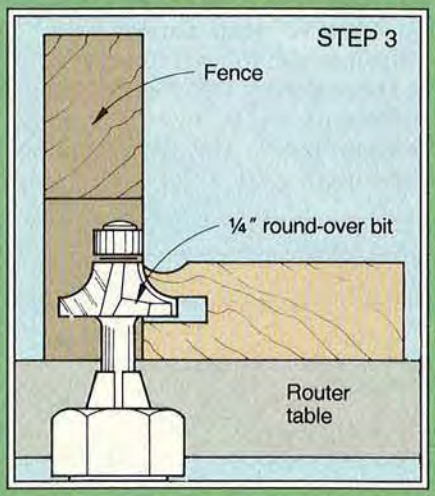
To mount the lid support, use #4×1/2" roundhead brass wood screws, and position the support as shown in the jewelry-box project on *page 56.*

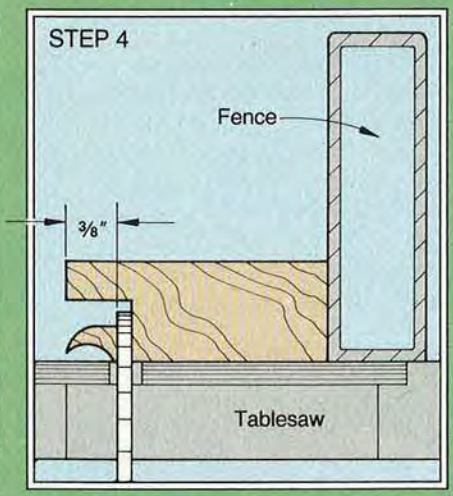
A TERRIFIC ROUTER-MADE HANDLE FOR LIDS

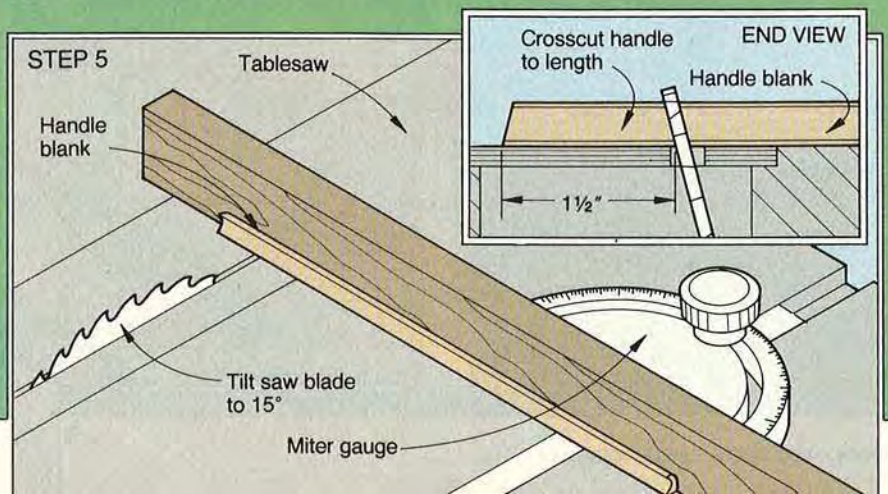
Now that you've taken the time to make wooden hinges and a lid support, just any old handle for the jewelry-box lid simply won't do. In this step-by-step sequence, you'll learn how to make the handle shown at *left.*





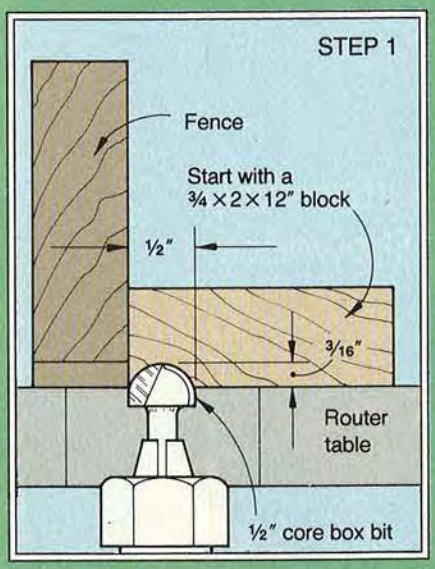


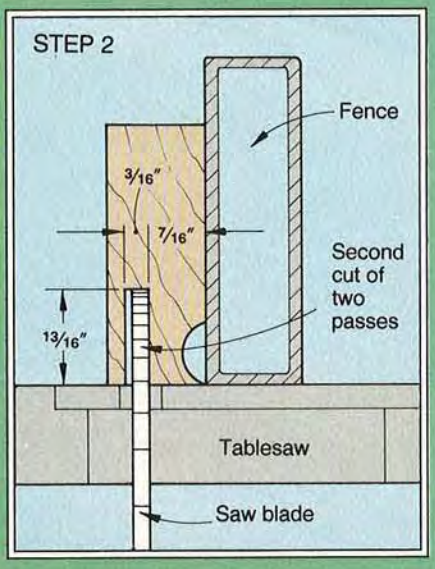


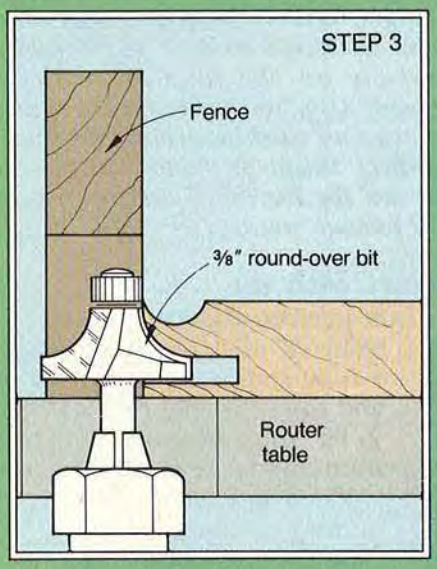


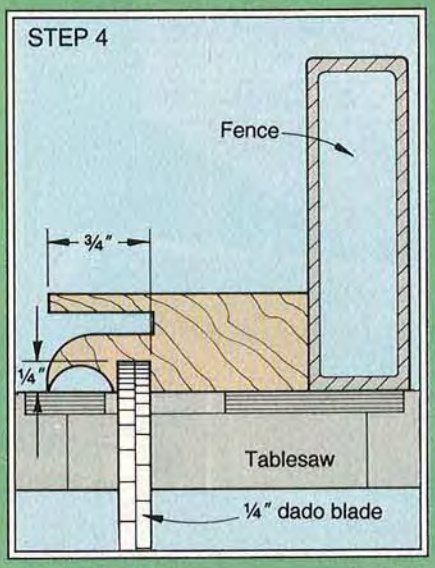
THIS HANDLE WORKS GREAT AS A TRAY LIFT

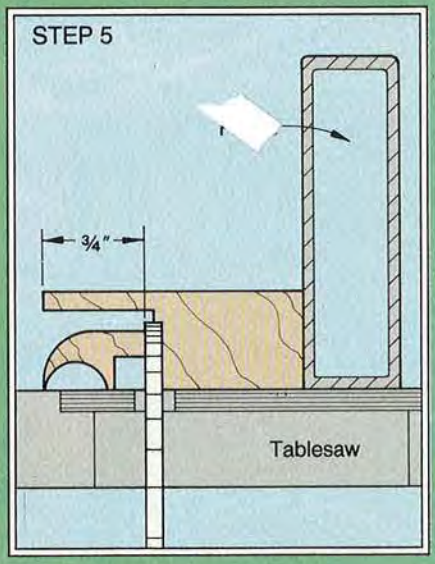
This sequence shows you how to make the tray handles used in the jewelry-box project beginning on page 56. You can enlarge the design for bigger projects.

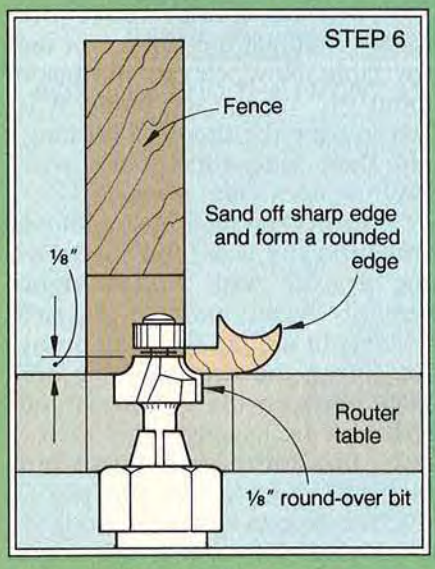


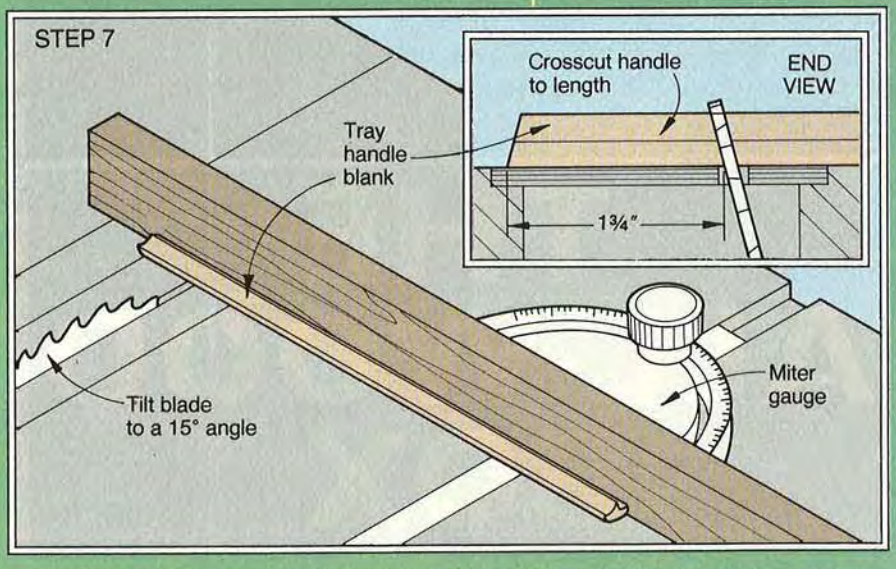




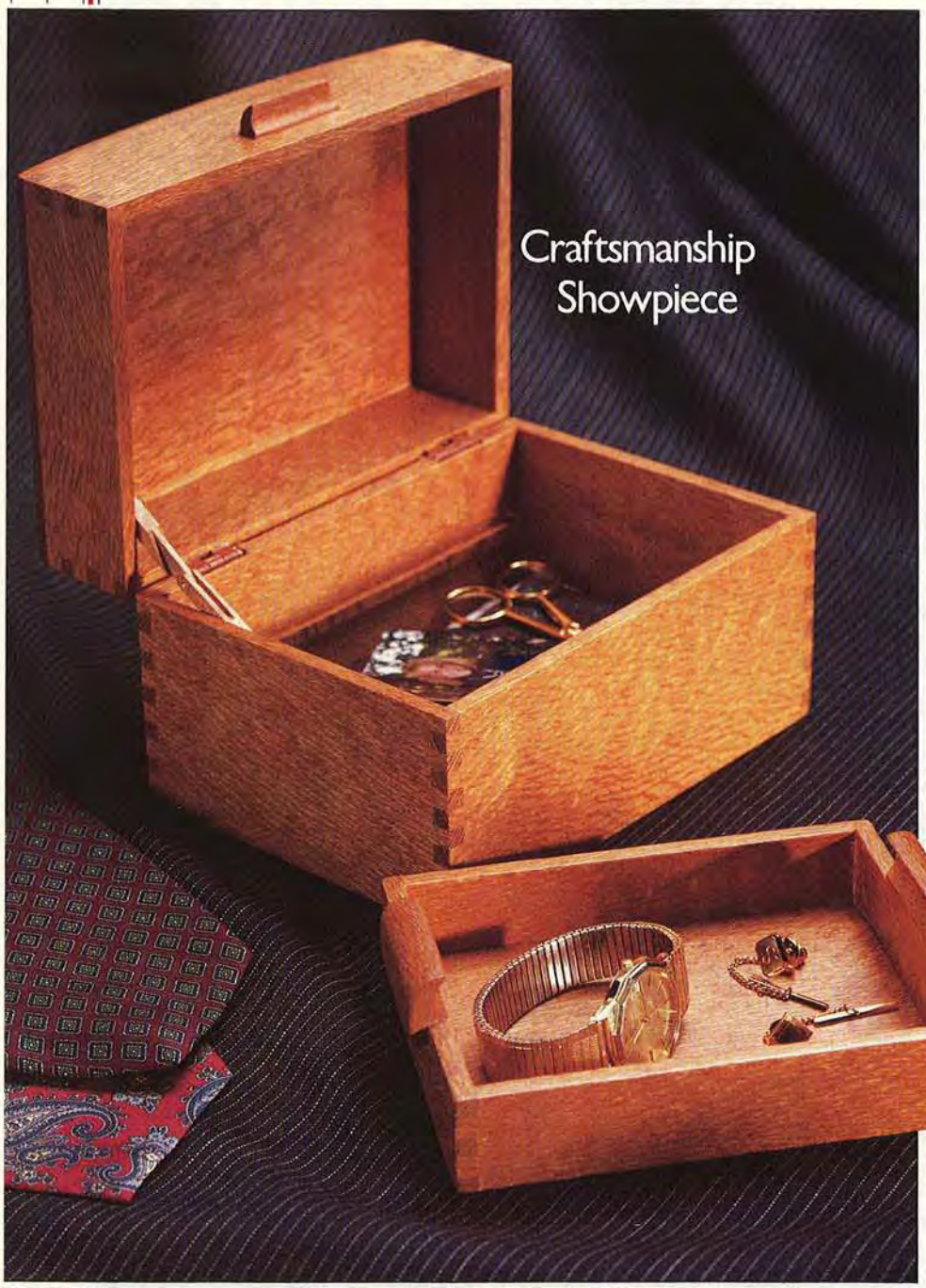








Written by Bill Krier with Jim Boelling Illustrations: Kim Downing; Mike Henry Photographs: Hopkins Assoc. Hardware design: Craig Brown



THE ALL-WOOD BOX

Print this article

If you're looking for that one-of-a-kind gift for a loved one, you've just hit pay dirt. This finely crafted box boasts wooden hinges, wooden handles, and even a wooden lid support. Try to find these exquisite features on a store-bought box! After putting your craftsmanship to work on this showpiece, be sure to sign and date it on the bottom because it's bound to be treasured for generations.

Note: To build the handles, hinges, and lid support, refer to the wooden-hardware techniques article on the four preceding pages. Also, you'll need some thin stock (we used lacewood) for this project. Resaw or plane your own, or see the Buying Guide on page 59 *for our source.*

Start with the box-jointed pieces

1 From ¼"-thick stock, cut the box front and back (A) to 5×7" and the sides (B) to 5×5".

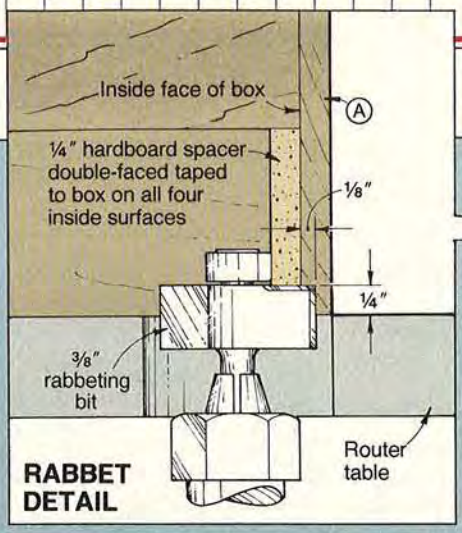
2 Fit your tablesaw with a homemade zero-clearance wooden insert (our Delta requires a ½"-thick insert).

3 Mount a ¼" dado blade to your tablesaw. Raise the blade ¼" above the surface of the saw table. Now, elevate the blade about 1/32" more (we found it is best to have the fingers a bit long, and then sand them flush with the box sides after assembly).

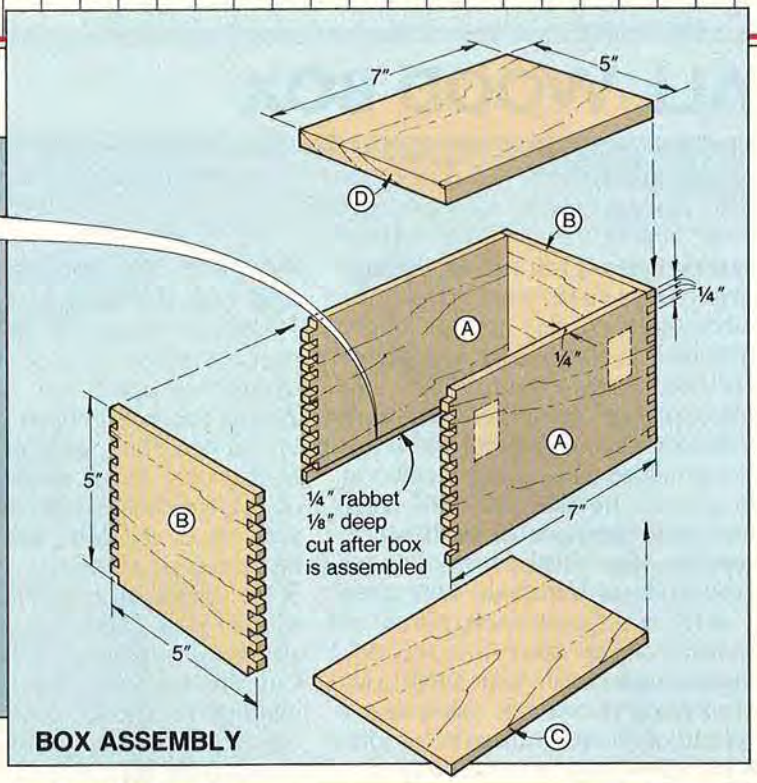
4 Construct the jig and stop block shown on the Box Joint Jig drawing *opposite page, middle right.* Carefully locate and cut the two ¼" kerfs in the jig. For snug-fitting box joints, the kerfs and the distance between the guide pin and kerf must be exactly ¼".

5 To box-joint both front and back pieces (A), tape the pieces together face-to-face with double-faced tape. Check that the edges

Continued



RABBET DETAIL



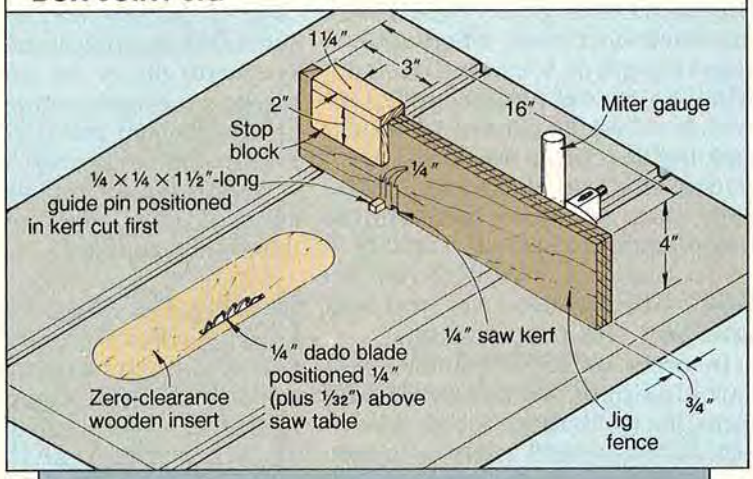
BOX ASSEMBLY

Bill of Materials

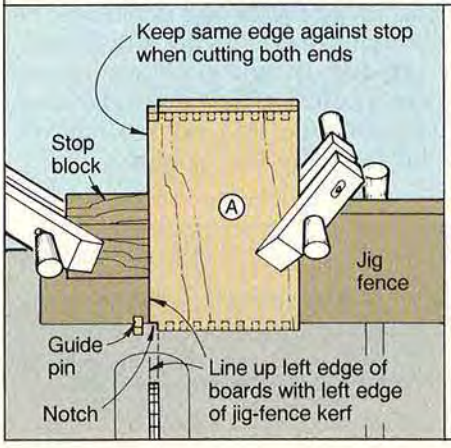
Parts		Finished Size* T	W	L	Matl.	Qty.
BOX						
A*	front & back	¼"	5"	7"	L	2
B*	sides	¼"	5"	5"	L	2
C	bottom	¼"	4¾"	6¾"	L	1
D*	top	½"	5"	7"	L	1
E*	supports	⅛"	¼"	6½"	L	2
F*	lid handle	¼"	⅜"	1½"	L	1
TRAY						
G	front & back	¼"	1¼"	5¾"	L	2
H	sides	¼"	1¼"	47/16"	L	2
I	bottom	¼"	43/16"	5½"	L	1
J*	handles	⅜"	¾"	1¾"	L	2

*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.
Supplies: double-faced (carpet) tape, #4×⅜" roundhead wood screws, finish.
Material Key: L—lacewood

BOX-JOINT JIG



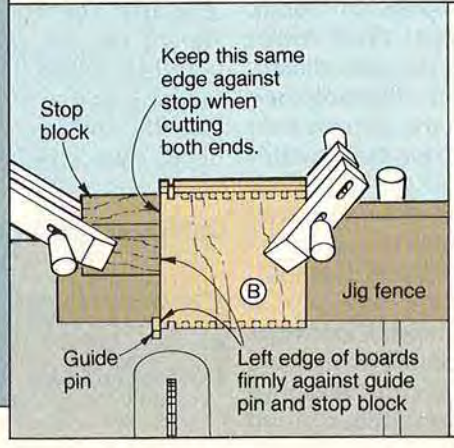
BOX-JOINTING THE FRONT AND BACK


Keep same edge against stop when cutting both ends
Stop block
A
Jig fence
Guide pin
Notch
Line up left edge of boards with left edge of jig-fence kerf

STEP 1.
Cut a ¼ × ¼" notch in corner.

STEP 2.
Slide corner of notch firmly against guide pin and cut second notch in both boards.

BOX-JOINTING THE SIDES


Keep this same edge against stop when cutting both ends.
Stop block
B
Jig fence
Guide pin
Left edge of boards firmly against guide pin and stop block

STEP 1.
Cut first notch. Remove stop block.

STEP 2.
Place notch over guide pin and cut second notch. Similarly, cut the remaining notches.

ALL-WOOD BOX

FULL-SIZED LID PATTERN
SIDE VIEW (D)

and ends are flush. Repeat the taping procedure with the side pieces (B).

6 Follow the drawings at *right* to cut the notches in the front and back pieces, and then the side pieces. (We box-jointed ¼" scrap stock before cutting our lacewood to test the jig and process.) After notching the ends of each piece, separate the pieces, remove the tape, and sand smooth. (We used a thin, wedge-shaped piece of wood to pry apart the taped-together pieces. If you have trouble prying the pieces apart, use a splash of lacquer thinner to dissolve the adhesive on the tape.)

7 Cover the mating surfaces of the box joints with glue. (To achieve extended open time when applying the glue, we used white woodworker's glue, and applied it with a ¼"-wide acid brush). Glue and lightly clamp the pieces (A, B) and check for square. Immediately, wipe off excess glue with a damp cloth.

Rout the rabbet, and add the box bottom

1 In order to use a standard ⅜" carbide-tipped rabbeting bit to form the ¼" rabbet for the box bottom (C), you'll need to insert ¼"-thick spacers where shown on the Rabbet detail accompanying the Box Assembly drawing. To do this, cut a 1"-wide strip 25" long from ¼" hardboard. Trim four pieces to fit inside the box, flush against the four walls. Secure the ¼"-thick spacers to the bottom interior surfaces of the box with double-faced tape.

2 Fit your table-mounted router with a ⅜" rabbeting bit. Rout a ¼" rabbet ⅛" deep along the bottom inside edge of the box.

3 Using a sharp chisel, carefully square the round-routed corners.

4 From ¼" stock, cut the bottom (C) to fit inside the rabbet.

Add the top and bottom, and cut the box in two

1 From ½" stock, cut the box top piece (D) to size plus 1/16" in length and width.

2 Glue the box bottom (C) in the ¼" rabbet. Then, glue the top (D) to the box. Later, sand the edges of the top flush with the outside surfaces of the box, and sand the box exterior smooth.

3 Fit your tablesaw with a single blade, and raise the blade ⅜" above the surface of the saw table. Cut the lid from the bottom by making four cuts where shown on Step 1 of the drawing titled Cutting the Box in Two.

4 Follow Step 2 to trim the top edge of the box bottom. This ensures that the box joints alternate symmetrically at the point where the box top and bottom meet.

5 Transfer the full-sized lid outline to the front edge of the lid. Next, sand to the line to shape the contour on the lid top (we did this on a stationary sander).

Routing the hinge recesses

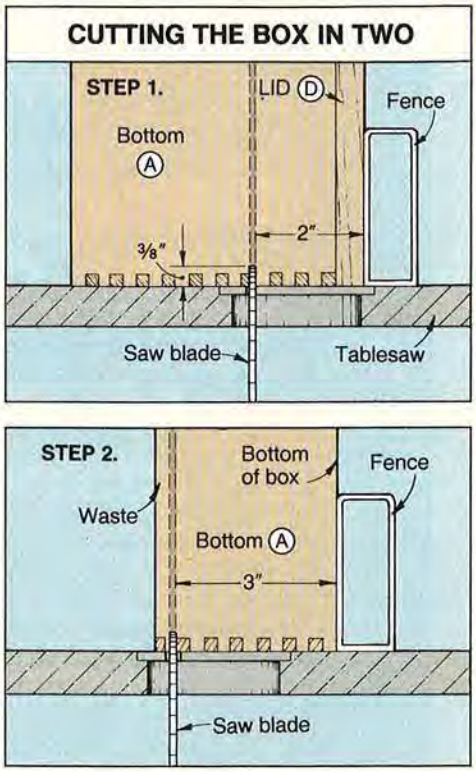
1 Tape the box lid to the box bottom where shown on the drawing titled Routing the Hinge Recesses in the techniques article on *page* 52. Make sure that the box is taped together so the box-lid and box-bottom grain matches; it's easy to flop the pieces by mistake.

2 Build the routing template shown on the drawing. Fit your portable router with a ½" guide bushing and a ¼" straight bit. Adjust the bit to cut exactly 3/16" deep. (We checked the depth of cut in scrap stock before cutting the hinge recesses in the box.)

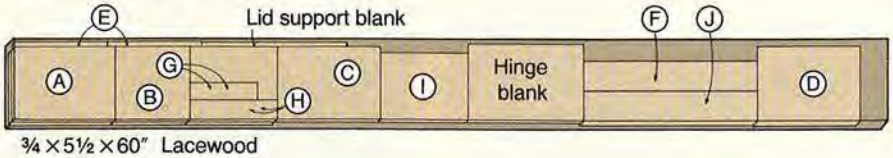
3 Hold the box steady in a woodworker's vise or with a handscrew clamp that is, in turn, clamped to your workbench with a second handscrew clamp.

4 Position the template over the box (it should fit snugly), adhering it temporarily with double-faced tape. Next, rout a pair of 3/16" hinge recesses in the box back; see the Router detail accompanying the drawing titled Routing the Hinge Recesses in the techniques article for reference. Remove the jig, and separate the lid from the box bottom.

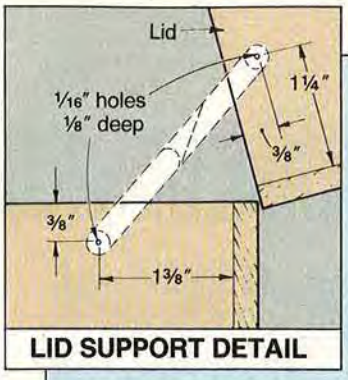
CUTTING THE BOX IN TWO



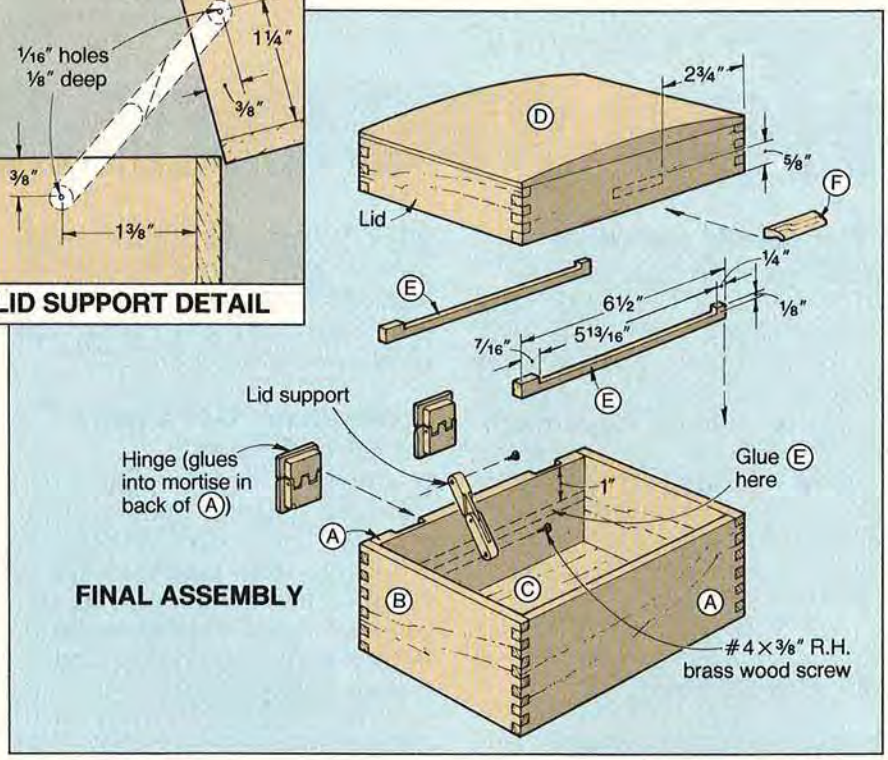
Cutting Diagram



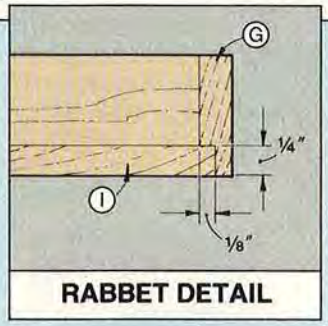
¾ × 5½ × 60" Lacewood



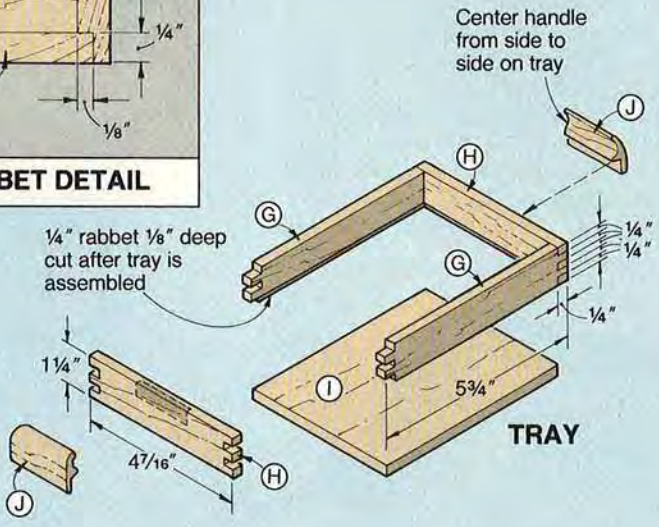
LID SUPPORT DETAIL



FINAL ASSEMBLY



RABBET DETAIL



TRAY

Buying Guide

• **Lacewood.** One piece of ¾×6×60" stock or two pieces of ¾×6×32" (depending upon availability). No. WD691, $29.95 ppd. Constantine's, 2050 Eastchester Road, Bronx, NY 10461. Or call 800/223-8087 or 212/792-1600.

5 Clamp a 6"-wide board to your workbench top so about 3" overhangs the edge of your bench. Using the end of the board for support, rest the lid on the board and chisel the round-routed hinge corners square. Left unsupported, it's easy to chisel through the 1/16" stock left in the bottom of the hinge recess. Repeat the process for the box bottom hinge recesses.

Time for the tray

1 Cut the tray supports (E) to shape. Form the lid handle (F) as shown and described in the techniques article.

2 Cut the tray front and back (G) and sides (H) to size. Using the box-joint jig and the process described for making the box front, back, and sides, cut notches in the ends of the stock.

3 Glue the tray pieces (G, H), checking for square. Following the procedure used to cut the rabbet in the box bottom, cut the ¼" spacers to size, and then rout a ¼" rabbet ⅛" deep along the bottom inside edges of the tray. Chisel the round-routed corners square.

4 Measure the opening, and cut the tray bottom (I) to size, and glue it in place.

Add the hardware, and then the finish

1 Glue and clamp the tray supports (E) to the front and back of the box interior where shown on the Final Assembly drawing.

2 Finish-sand the parts.

3 Glue the hinges into the routed recess in the back of the assembly, making sure to center the hinges where shown on the Hinge detail on page 52 in the Wooden-Hardware techniques article.

4 Fasten the lid support to the box and lid where shown in the Lid Support detail accompanying the Final Assembly drawing.

5 Screw the lid support to the lid and box bottom. Then, glue the handles to the tray and lid.

6 Add the finish of your choice to the box and tray.

Produced by Marlen Kemmet Project Design: Craig Brown Photographs: Hopkins Associates Illustrations: Kim Downing; Bill Zaun

Can't-miss gifts for you-know-who

WORKSHOP STOCKING

Looking for the ideal gift for a woodworker? Or a little something to add to your own wish list? We've got you covered. Because woodworkers like to receive gifts as well as give them, we polled the *WOOD*® magazine staff to find out what items they thought you would like to find in your stockings come Christmas morn. Our only requirements were that the items be immensely useful, smaller than a breadbox, and cost less than $100.

We came up with the 16 items shown on the following four pages. These products have proven themselves day in and day out in our own workshops. Chances are, you'll be similarly impressed.

1 Cut dentils and other moldings with your router

With the Sears Craftsman Mill-Works Molding Maker, your router, and a few bits, you can work wonders. Just a few of the nearly endless possibilities: standard dentils, dentils that taper in depth, and fluted moldings. The Molding Maker comes predrilled for Sears routers only, but you can drill holes for holding any router with a 6"-diameter base.

Sears Craftsman Mill-Works Molding Maker, less than $50 at your local Sears store.

2 How to give projects that personal touch

With one of these inexpensive branding irons, you can identify your projects with a "Hand crafted by *your name*" insignia. Won't the recipient be impressed!

Branding iron with two lines (your name can be up to 20 characters with spaces), $26 ppd., from Nova Tool Co., P.O. Box 29341, Dept. BG, Lincoln, NE 68529. Call 800/826-7606 or 402/464-0511. Other models with additional lines and electric versions also available.

3 Hex-shank bits a boon for all drill users

If you get tired of constantly chucking different bits into your drill, here's a product with a solution. Poly-Tech Industries has a complete line of drill, driving, and countersinking attachments with ¼" hex-shaped shanks that quickly snap into a special chuck. This, in turn, attaches to your drill. Called the Insty Bit System, it makes changeovers as fast as snapping sockets onto socket drivers.

Insty Bit System chucks and accessories, from Poly-Tech Industries. Prices range from $2 to $35. Call 800/334-7472.

Print this article

STUFFERS

4 Quick-change countersinks

For countersinking jobs, you can't top the Fuller No. 9 countersink set. Like the Insty Bit System, the Fuller set comes with an adapter chuck for quick, hassle-free changing of the ¼" hex shanks. The set includes bits for wood screw sizes No. 6 through No. 14, two stop collars, and an allen wrench for quick adjustments.

Fuller No. 9 countersink set, $60.80 ppd. from W.L. Fuller Inc. Call 401/467-2900.

5 Space-age tool puts pleasure in hand planing

Many woodworkers never touch a bench plane because they haven't mastered the art of sharpening, adjusting, and handling this classic tool. With the Rali 220 bench plane, you don't have to be concerned about such things.

The Rali glides smoothly along work surfaces without digging in, and uses double-edged, razor-sharp disposable blades. A simple blade-holding mechanism automatically indexes the blade square to the sole.

Rali 220 bench plane, $89.95 ppd., from Farris Machinery, 320 N. 11th St., Blue Springs, MO 64015. Replacement blades cost $25 ppd. for a 10-pack. The smaller Rali 105 block plane, $59.95 ppd., uses the same blades.

6 An effective, comfortable, and affordable respirator

The 3M Easi-Care respirator looks, feels, and works like a cartridge-type reusable mask, but it has the affordability and convenience of a disposable respirator. Its filters protect you from paint or varnish spray and sawdust. You can replace its prefilters several times before the cartridges wear out.

3M Easi-Care disposable respirator, available from auto-paint suppliers nationwide, or for $14.59 plus postage from Hawkeye Auto Paint, 417 12th St., Des Moines, IA 50309. Call 515/282-6099. Specify small, medium, or large. Pack of 10 prefilters costs $11.03 plus postage.

7 For the turner who (thinks he) has everything

By moving the Chatter Tool along a turning workpiece, you can inscribe markings such as those shown on the back of the hand mirror *below left.* To vary the effect, you need only change the length of the tool's springy blade, the speed of the lathe, and the speed of the blade as you move it across the workpiece.

Chatter Tool, $32 ppd., from Klein Designs, 6514 115th Place, S.E., Renton, WA 98056. Call 206/226-5937.

8 A better transfer paper

Here's a superior alternative to carbon paper for transferring patterns. Saral transfer paper doesn't contain wax or grease, so it disappears with a pencil eraser, doesn't smear, and you can paint safely over it. And, the product comes in blue, red, dark gray (graphite), yellow, and white.

Saral transfer paper, available at art and craft stores nationwide. Or, send $5 ppd. for a sampler pack of five 8½ × 12" sheets in five colors, to Saral Paper Co., 322 W. 57th St., Suite 30-T, New York, NY 10019. Call 212/247-0460.

Continued

WORKSHOP STOCKING STUFFERS

9 Router crank makes for quick height changes

A lot of people sell retrofit router height-adjustment knobs for raising and lowering table-mounted plunge routers. However, none of them works quicker or with more ease than the crank-type model sold by Tools Etc. You can buy cranks for the Hitachi TR-12, Makita 3612, Bosch 1611, Porter-Cable 6931, and Elu 3337 and 3338.

Router height-adjustment crank handles, $34.45 ppd. (quick-release versions available for some routers for $10 more) from Tools Etc. Call 714/525-3581.

10 Dial calipers assure accurate measurements

Few under-$30 investments will bring as much accuracy and convenience to your shop as dial calipers. Here are just a few of the measurements (up to 6") this tool will make: inside diameters of holes, outside diameter of dowels, bolts, drill or router bits, and hole depths. The easy-to-read dial measures in 1/64" fractions and decimals to .01".

6" dial calipers, No. 17V42, $26.50, Woodcraft Supply, 210 Wood County Industrial Park, P.O. Box 1686, Parkersburg, WV 26102. Call 800/225-1153.

11 Down-sized combination square adds convenience

Wouldn't it be nice if you could just reach into your pocket whenever you need a combination square, just as you do with your tape measure? Starrett's 4" combination square allows you to do just that. And, you won't find a better made combination square at any price.

Starrett 4" combination square, model C11H-4-4R, $31 ppd., from Industrial-Kurtz, 2150 Delaware Ave., Des Moines, IA 50317. Call 515/266-4656.

12 Instant (glue) gratification

We use a lot of instant glue in the *WOOD* magazine shop, and so far we haven't found anything that tops the instant adhesives made by Satellite City. The company offers these glues in various consistencies, and now has an odorless version that won't attack foam. Other products include curing accelerators and solvents.

Satellite City Instant Adhesive Products, P.O. Box 836, Simi Valley, CA 93062-0836. Call 805/522-0062 or write for your nearest dealer or for a price list.

13 Low-cost rechargeable rotary tool goes for hours

Although it weighs only 10 ounces complete with battery, the Dremel Mini-Mite cordless rotary tool provides a surprising level of sanding, drilling, and detailing performance. The unit has two speeds, recharges in three hours, and comes with five bits. The tool accepts standard Dremel collets and bits in sizes 1/32–1/8".

Dremel Mini-Mite, about $35 at hardware and hobby stores nationwide. Dremel, 4915 21st St., Racine, WI 53406-9989. Call 414/554-1390.

14 5-minute epoxy in pint kits for us heavy users

It's hard to beat 5-minute epoxy for gap-filling strength, curing speed, and all-around handiness. But, buying it in small one- or 2-ounce tubes can get expensive. The solution: this pint kit containing 8 ounces of resin and 8 ounces of hardener. (Shelf life is about 5 years.)

Pint kit of 5-minute epoxy, $18 ppd. from System 3 Resins, P.O. Box 70436, Seattle, WA 98107.

15 Quick way to extend the life of your abrasive belts

Sanding belts and discs lose their effectiveness as they load up with debris, but here's a cheap and easy way to fight back. Just hold this 2×2×12" crepe-rubber stick against the moving abrasive and watch the sanding surface come clean. For most of us home woodworkers, a single stick will last a year or more.

Magnum stick, model No. G1512, $8.95 plus postage from Grizzly Imports. Call 800/523-4777 or 717/326-3806 if you live east of the Mississippi River; 800/541-5537 or 206/647-0801 if you live west of the Mississippi.

16 This year, doesn't he deserve diamonds?

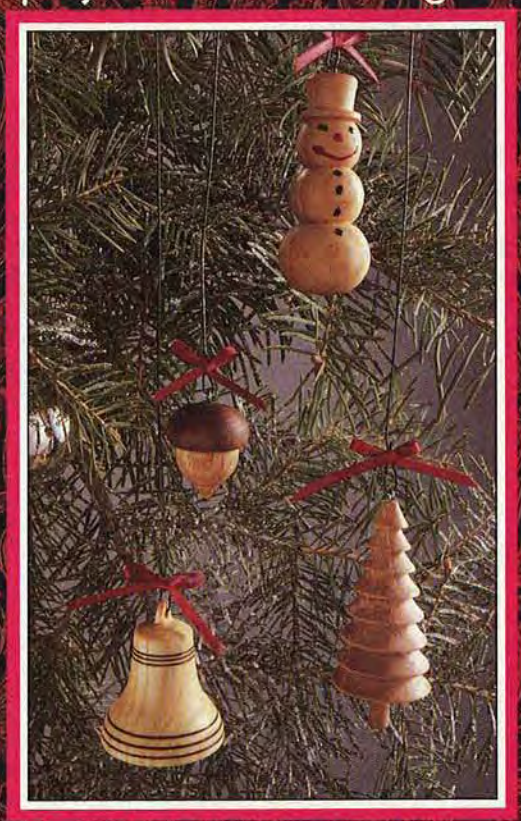
Nothing is harder than a diamond, and nothing sharpens your steel and tungsten-carbide tools like a diamond whetstone. The "stones" come in several sizes and shapes, with diamond particles ranging from fine to coarse to extra coarse. Shown is the Diafold model with a fold-up handle.

Diamond Whetstones from Diamond Machining Technology (DMT), 85 Hayes Memorial Drive, Marlborough, MA 01752-1892. To order call 800/666-4368.

Written by Bill Krier
Photographs: Hopkins Associates

WOOD MAGAZINE'S HOLIDAY HELPERS

9 outstanding projects to make and give



This season, avoid congested shopping malls while in search of the perfect gifts. Turn, instead, to your shop and our roundup of pleasing projects.

Print this artic

Here's a spirited foursome of

Turner Ron Odegaard has been making tree ornaments from small bits of hardwood for more than 15 years. "If I make a piece of furniture, I often have enough scraps left over to make ornaments," Ron said. He also gathers scraps from other woodworkers near his Appleton, Wisconsin, home rather than see potential turnings buried in a landfill or burned. Here are four of Ron's favorite ornaments.

To start, copy the full-sized templates, *opposite page,* to posterboard, and then cut them out with an X-acto knife. You can adapt the designs to fit larger or smaller pieces of wood, too.

Let's build a snowman

Locate and mark the centerpoint on each end of a 1½" turning square about 3½" long. Mount the square between your lathe centers, and then turn it to a 1¼" cylinder with the ½" gouge.

Using the template, mark sections for the three beads and the top hat, and then turn them to shape with the spear-point tool or a gouge. Finish-cut with the ¼" skew. Cut in to ⅛" at the top and bottom with the parting tool.

Next, sand the snowman with 150-, 220-, and then 320-grit sandpaper. Remove your turning from the lathe, saw off the waste, and sand the ends flat.

As the tree turns

Start the tree with a 1½" square about 4" long. Turn it to 1⅜" diameter, and then, using your template, mark off the 2½" body section and the ¾" trunk.

Taper the body section to about ¼" at the top. Now, shape the tree by cutting a series of partial cones with the ¼" skew chisel. Starting at the bottom of the body, space cuts a skew width apart. Turn the trunk to ¼" diameter.

YULETIDE TURNINGS

Sand with progressively finer grits, but be careful—the sharp edges of your turning can cut just like rotary knives. Part in to about ⅛" at top and bottom, remove the tree from the lathe, cut off the waste, and sand the ends.

An acorn from two woods

Glue together two 1½×1½×1" pieces of contrasting woods to make 1½×1½×2" stock for the acorn. Turn the blank between centers to 1⅛" diameter. Shape the acorn with the ¼" skew, placing the division between top and bottom right at the glued joint. Sand and remove the turning.

Make a holiday chime

Begin the bell with a 2×2×3" square, and then round it to 1¾" diameter. Mark off a 2" section for the bell, and then turn a tenon on the waste end to fit your chuck. (If you don't have a lathe chuck, square the waste end and mount the turning on a screw point.)

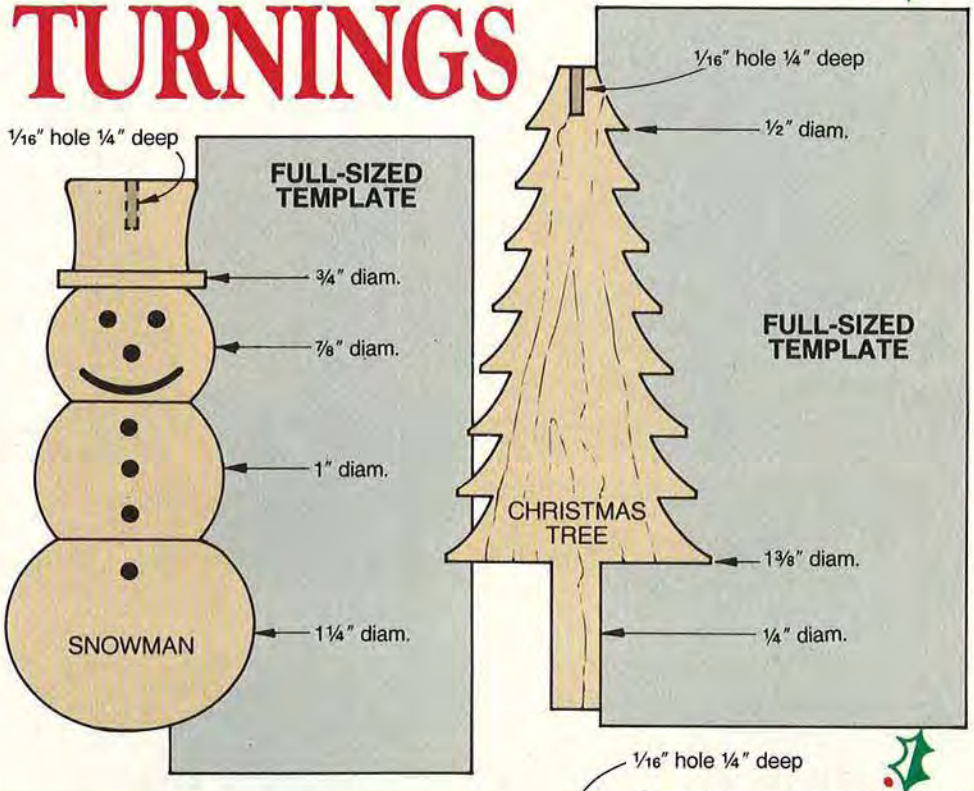
Turn the bell to shape with a gouge, checking with your template. Then, hollow it out with the ½" round-point chisel. Cut the grooves with the ¼" skew.

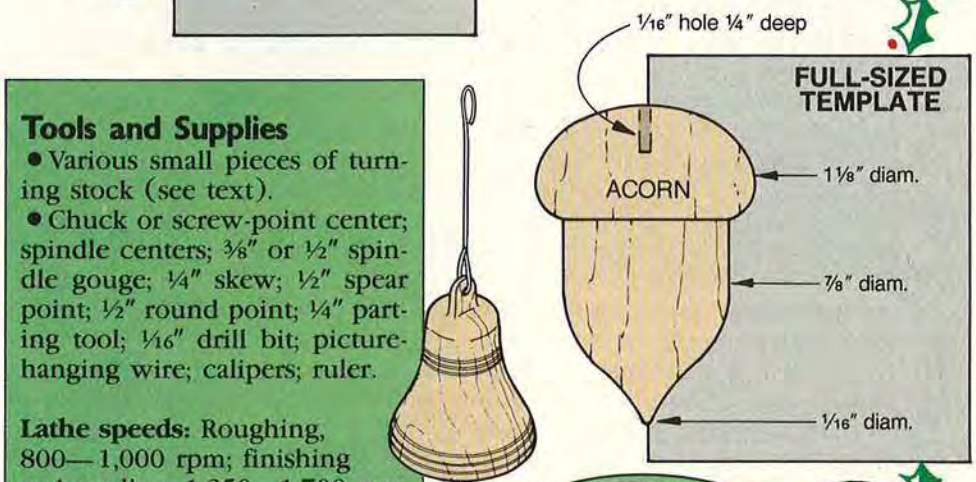
To burn in the grooves, firmly tie each end of a piece of wire—single-strand picture-hanging wire about 12" long works well—to a length of dowel. With the lathe running, stretch the wire and press it into each groove.

Sand and remove from the lathe. File or sand flat sides on the hanging tab, ⅛" thick. Turn the clapper from ⅜"-diameter stock.

Finish them all up

Bend five wire eyes (see pattern, *right*) for each set of four ornaments. Link two to hinge the bell clapper. Drill 1/16" holes where shown on the patterns with a brad-point bit in a drill press.





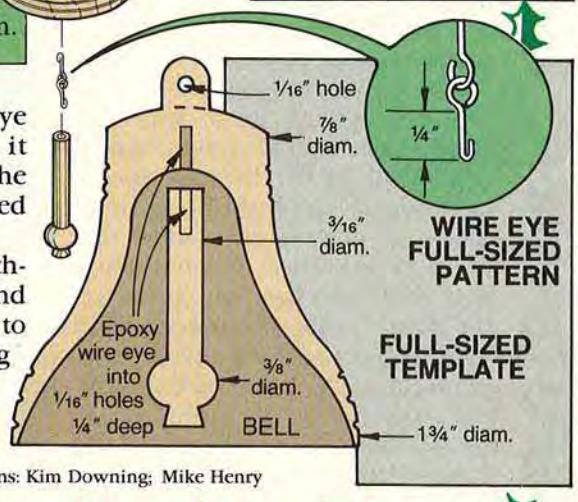
Tools and Supplies

- Various small pieces of turning stock (see text).
- Chuck or screw-point center; spindle centers; ⅜" or ½" spindle gouge; ¼" skew; ½" spear point; ½" round point; ¼" parting tool; 1/16" drill bit; picture-hanging wire; calipers; ruler.

Lathe speeds: Roughing, 800—1,000 rpm; finishing and sanding, 1,250—1,700 rpm.

Coat the shank of the wire eye with epoxy before inserting it into the ornament. Assemble the bell and clapper with the linked eyes, gluing each into place.

Put thick paint on with a toothpick for the snowman's face and buttons. Apply a clear finish to your ornaments, and then hang them on the front of your tree for all to see.



Design: Ron Odegaard
Photograph: Hopkins Associates Illustrations: Kim Downing; Mike Henry

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TEDDY BEAR MUSIC BOX

This adorable walnut bear, with its trio of colorful balloons, turns to the tune of "Music Box Dancer." To wind, just rotate the bear and turntable clockwise on the oak base. In the nursery or on the dresser, this project is a surefire heart-warmer.

Begin with the base block

1 Rip and crosscut two pieces of ¾" oak to 5½×5½" for the base block (A). Spread an even coat of glue onto the mating surfaces, and clamp the pieces face-to-face, with the grain going in the same direction on both pieces.

2 To finish forming the base block (A), follow the six-step drawing *opposite page, top right*. See photo A at *right* for reference when forming the 2⅞"-diameter hole in the block.

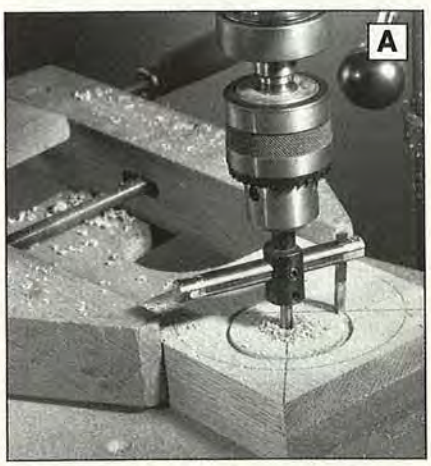
3 Place the music movement in the 2⅞" hole in the base block. Now, center the movement's turntable shaft in the ½" hole in the base block. Hold the movement firmly in place, and poke a nail through the movement mounting holes and into the bottom face of the plug. Do this to make a slight indentation, marking the centerpoint for each of the three mounting screw holes.

4 Drill three ⅛" holes through the plug where indented with the nail. Then, working from the top side, center a 5/16" Forstner bit over each ⅛" mounting hole, and drill a counterbore ¼" deep (see the Section View for reference).

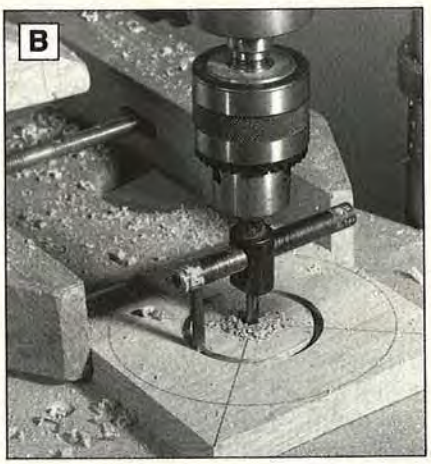
The base bottom and turntable come next

1 Mark a 3" radius (6" circle) on a piece of ¾"-thick oak for the base bottom (C). Bandsaw the piece to shape, and sand the bandsawed edge smooth. (We bandsawed just outside the marked line, and then sanded to the line with a disc sander.)

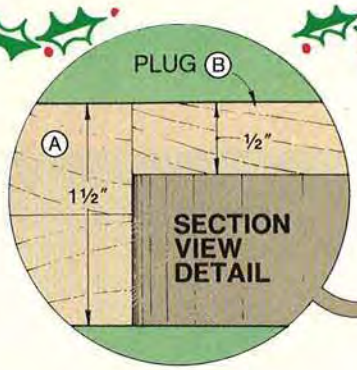
2 Cut a piece of ¾" oak to 6" square for the turntable (D). Follow the five-step drawing *opposite page, middle* to finish forming

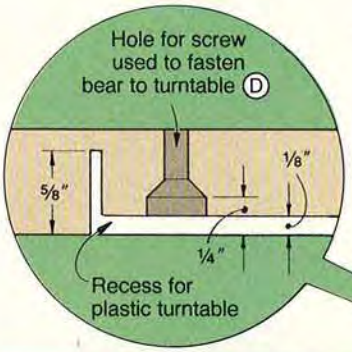


Use a circle cutter to form the 2⅞" hole in the laminated base block.

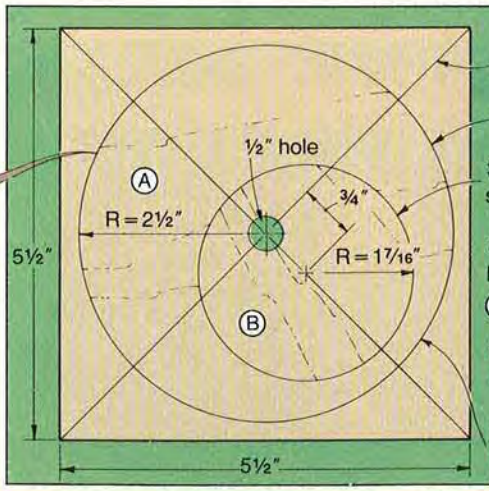


Cut the recess for the plastic turntable in the wood turntable (D).





BASE BLOCK



STEP 1. Draw diagonals to locate center

STEP 2. Mark radius (5" circle)

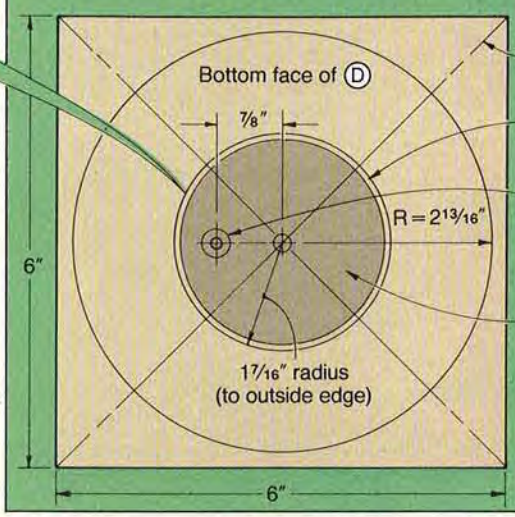
STEP 3. Drill a 2⅞"-dia. hole on centerpoint shown (see photo A for reference)

STEP 4. Cut a 2⅞"-dia. plug (B) to fit inside hole in (A). Glue top of plug flush with top of (A) where shown in the Section View detail.

STEP 5. Redraw diagonals to relocated centerpoint. Drill a ½" hole.

STEP 6. Bandsaw the base block (A) to shape. Sand smooth.

TURNTABLE



STEP 1. Draw diagonals to locate center, and mark a 2¹³⁄₁₆" radius.

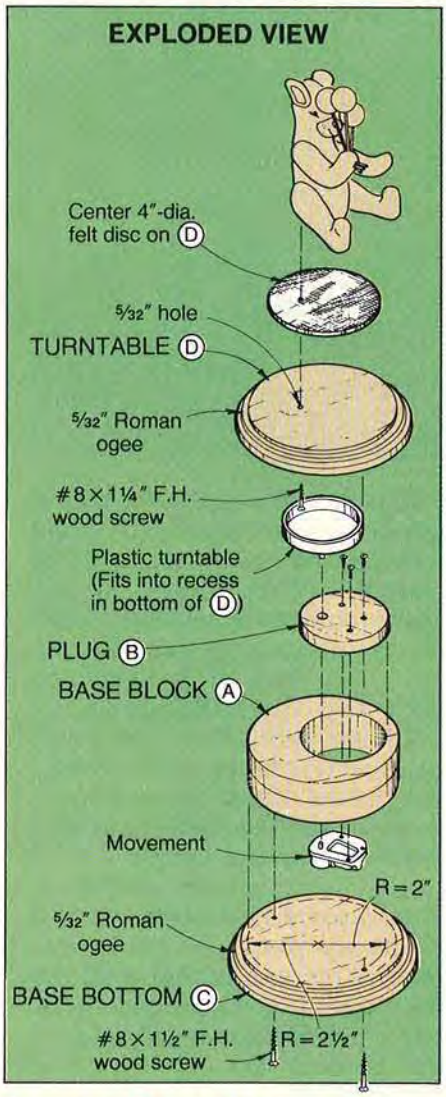
STEP 2. Using a circle cutter, drill a 2⅞"-dia. (1⁷⁄₁₆" radius) recess ⅝" deep. (See photo B for reference.)

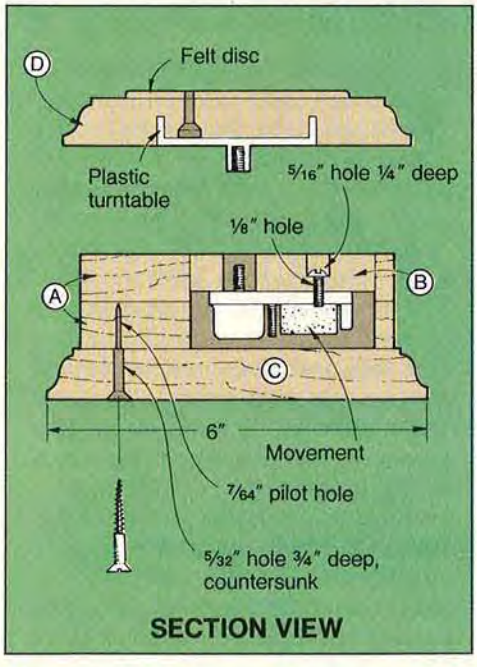
STEP 3. Drill a ⅝₂" hole countersunk ¼" deep for mounting the bear later.

STEP 4. Using a router and a ½" straight bit, freehand rout a ⅛" deep recess in shaded area only.

STEP 5. Bandsaw and sand part (D) to shape.

EXPLODED VIEW





SECTION VIEW

the turntable. Also, see the photo, *opposite page, bottom left* for reference when forming the outer wall of the 2⅞"-diameter recess to house the plastic turntable.

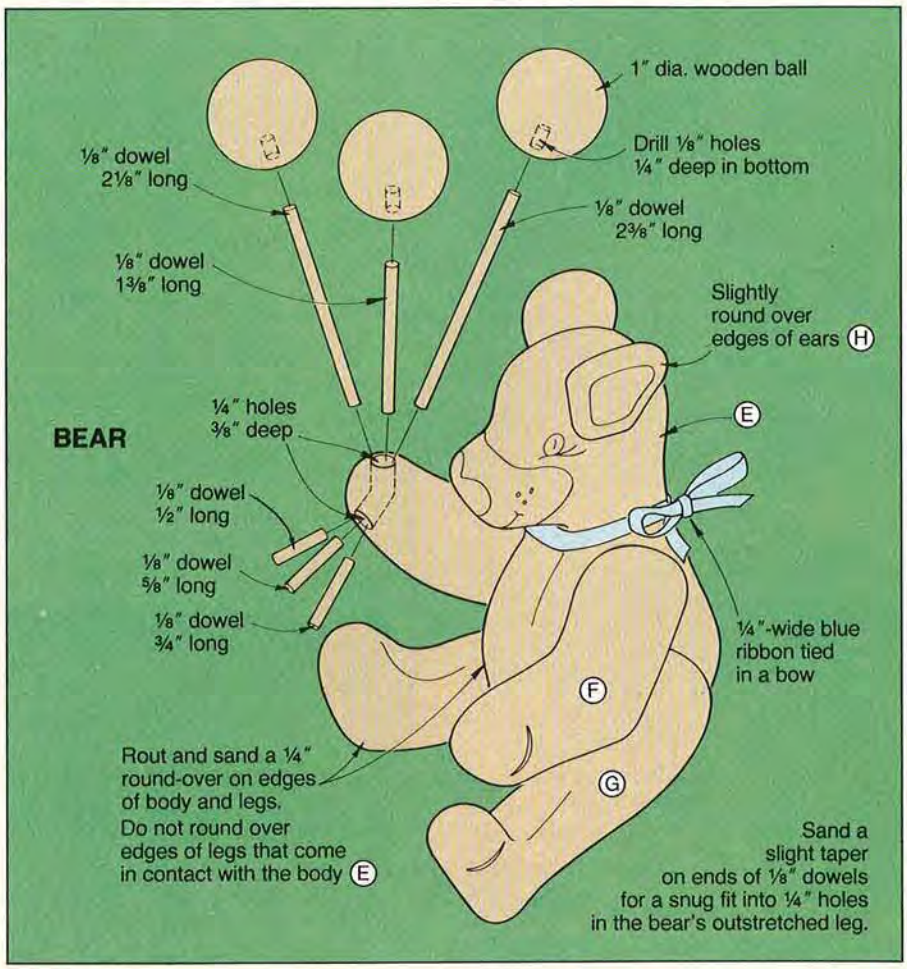
3 Rout a ⅝₂" roman ogee along the top edge of the bottom (C) and turntable (D) where shown on the Exploded View drawing.

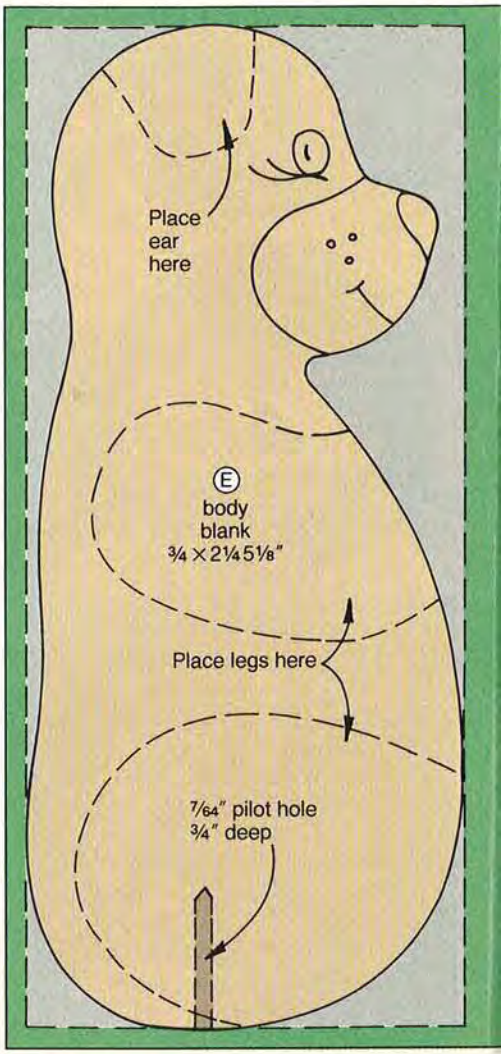
4 Center and clamp the base block (A) to the base bottom (C). Being careful not to drill into the 2⅞"-diameter hole in the base block, drill and countersink a pair of mounting holes through the base bottom and into the base block. See the Section View drawing for reference and hole sizes.

5 Sand the top surface of the plastic turntable, and epoxy it into the recess on the bottom of the turntable (D).

Continued

TEDDY BEAR MUSIC BOX


1" dia. wooden ball
Drill 1/8" holes 1/4" deep in bottom
1/8" dowel 2 1/8" long
1/8" dowel 2 3/8" long
1/8" dowel 1 3/8" long
Slightly round over edges of ears (H)
BEAR
1/4" holes 3/8" deep
(E)
1/8" dowel 1/2" long
1/8" dowel 5/8" long
1/8" dowel 3/4" long
1/4"-wide blue ribbon tied in a bow
(F)
(G)
Rout and sand a 1/4" round-over on edges of body and legs.
Do not round over edges of legs that come in contact with the body (E)
Sand a slight taper on ends of 1/8" dowels for a snug fit into 1/4" holes in the bear's outstretched leg.



The bear facts

1 From ¾" walnut, cut one block for the body (E), two blocks for the front legs (F), and two blocks for the back legs (G) to the sizes listed in the Bill of Materials and shown on the full-sized patterns.

2 From ½" walnut stock, cut the two ear pieces (H) to the sizes listed in the Bill of Materials.

3 Using carbon paper or a photocopy and spray adhesive, transfer the Side View Body pattern for parts (E, F, G, H) to the blocks of wood cut in Step 1.

4 Following the pattern lines and using either a bandsaw or a scrollsaw, cut the legs and body parts to shape. Using a scrollsaw or drum sander, shape the ears.

5 Next, mark the bevel location on each leg, and sand to the line. (We shaped the bevels on a stationary belt sander.)

6 Drill a 7/64" pilot hole ¾" deep in the bottom of the bear body (E) where shown on the full-sized pattern *above right.*

7 Rout or sand ¼" round-overs on all *but the mating edges* of the four legs and body where shown on the Bear drawing. (To keep our fingers safely away from the router bit, we held the pieces in a small handscrew clamp when routing as shown in the drawing on the *opposite page.* We had to change the clamp's position on each body part several times to rout all the required areas.)

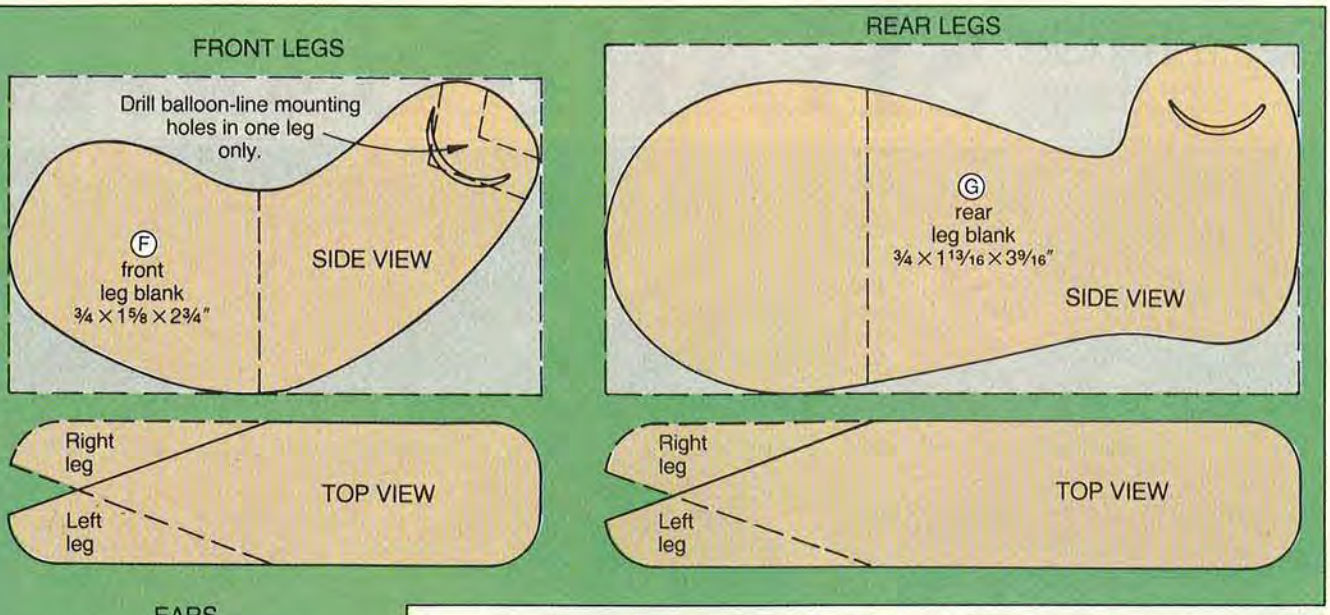
8 Glue the legs and ears to the bear body where indicated on the body pattern *above* (we held the pieces in place with spring clamps until the glue dried; masking tape also works well).

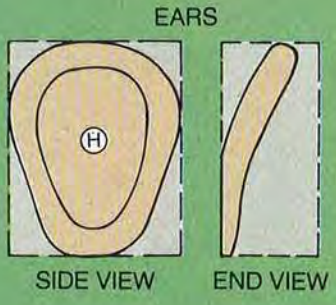
Let's add the balloons

1 Holding the right front leg in a handscrew clamp, drill ¼" balloon dowel holes where shown on the Side View Front Legs pattern. Finish-sand the leg.

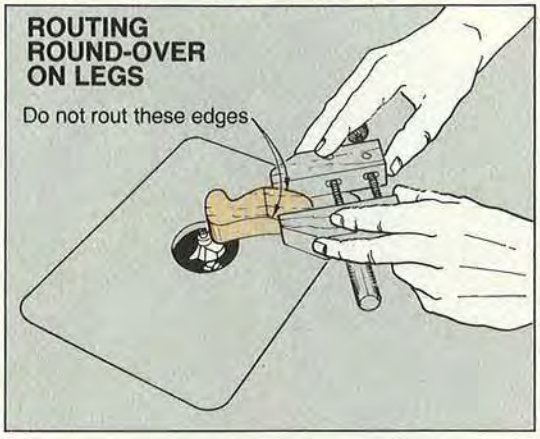
2 Drill a ⅛" hole ¼" deep in three 1"-diameter wooden balls.

3 Cut six pieces of ⅛" dowel stock to the lengths listed on the Bear drawing. Glue the three longer pieces into the ⅛" holes in the balloons.





FULL-SIZED PATTERNS



Buying Guide

● **Music box kit.** Handcrafted Swiss Reuge 18-note music movement playing "Music Box Dancer," plastic turntable for movement, and three 1" wooden balls (for balloons). Kit no. 71101, $16 ppd. Klockit, P.O. Box 636, Lake Geneva, WI 53147. Or, call 800/556-2548 to order.

4 Using the dowels as handles, paint the three wooden balls. Next, glue the balloon dowels into the top ¼" hole in the bear's right-front leg. Later, glue the three shorter dowels into the opposite end of the hole.

Sand and apply the finish

1 Sand slight round-overs on the ears. Then, finish-sand all the bear and box parts. Remove the movement from the base block, and apply finish to all the parts.

2 Paint the mouth/muzzle area, ears, and eyes where shown on the body pattern *above left* and opening photograph. (We used model-airplane enamels.)

3 Cut a 4"-diameter piece of felt. With 150-grit sandpaper, rough up the finish where the pieces mate. Center and glue the felt to the top of the turntable. Equally space and tap three thumbtacks into the top of the base block where shown on the Exploded View drawing.

4 Fasten the bear to the turntable, and add the bow to the bear.

5 Stick the threaded shaft through the hole, and fasten the movement to the base block with three mounting screws. Screw the base bottom to the bottom of the base block with a pair of screws.

6 Center the shaft from the plastic turntable over the threaded shaft protruding from the music movement and partially through the ½" hole in the plug (B). Slowly rotate the turntable/bear clockwise to thread the assembly onto the movement shaft.

Note: *Be careful not to overwind the mechanism (2½ revolutions is sufficient). After winding the music box, there should be about a 1/32" gap between the base block (A) and the turntable (D). If the turntable winds tightly against the base block, remove the movement from the base block, and belt-sand the top of the block to remove a bit of stock. If the turntable winds tightly against the base block, the music movement won't play and the turntable won't turn.*

Produced by Marlen Kemmet Project Design: Richard Gard Photographs: Hopkins Associates Illustrations: Kim Downing; Bill Zaun

Get a handle on these SHARP STEAK

What's almost as good as a really tender steak? You guessed it—a really sharp knife for cutting it! We teamed up with master knifemaker Walt Easley for this great design. You can make a set of these great knives in an evening. And after you do, you'll never have to say uncle to a tough steak again.

Print this article

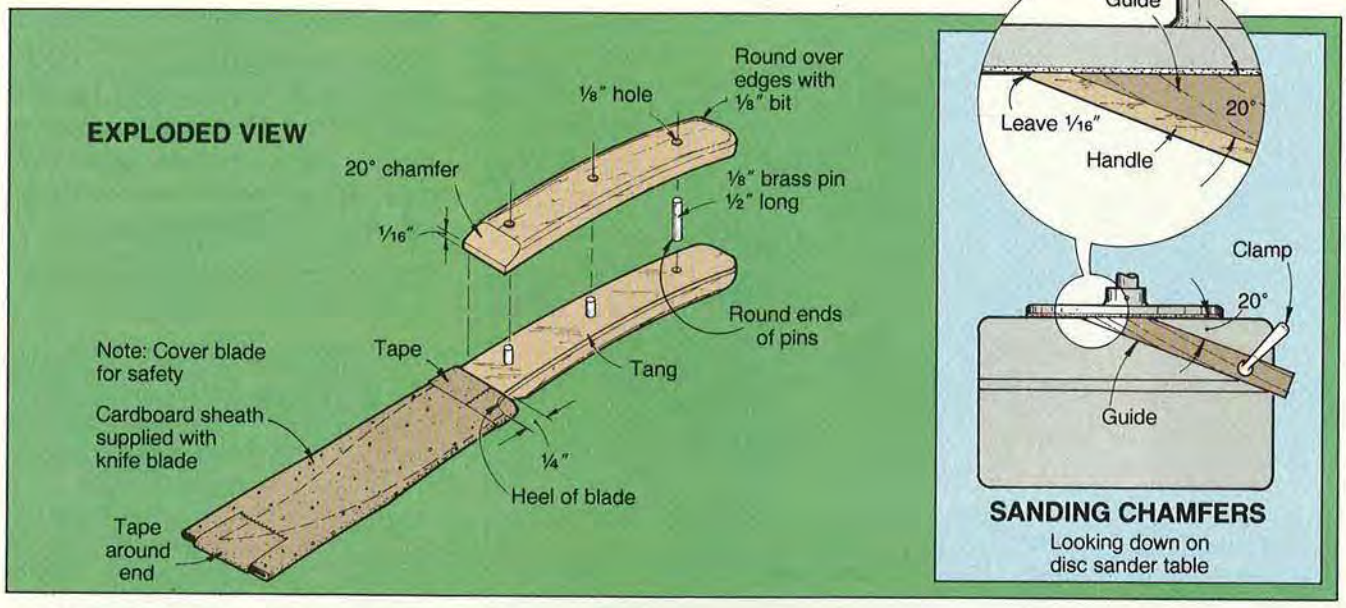
Note: *You'll need 3/16"-thick stock for the knife handles. (We resawed a 1½" teak turning square.) See the Buying Guide,* opposite page, *for our sources for the knife blades and handle stock.*

Before you do anything else, tape the cardboard protective sleeve to each blade for safe handling. (Walt's carbon-vanadium alloy blades are *sharp.*) Fasten the sleeve with masking tape, wrapping it onto the knife tang, ¼" behind the heel of the blade (shown on the Exploded View drawing, *opposite page*).

Lay the tape straight across the tang because you'll align the ends of the handle pieces with it later. Stick some tape over the open end of the sleeve, too.

Rip 3/16"-thick stock to 1" wide, and then crosscut a 4" length for each handle side. Cut 12 pieces for the set of six knives. Refer to the Sanding Chamfer drawing, *opposite page,* and sand a 20° chamfer on one end of each piece, leaving a 1/16" square end. Copy the guide angle from the drawing.

KNIVES



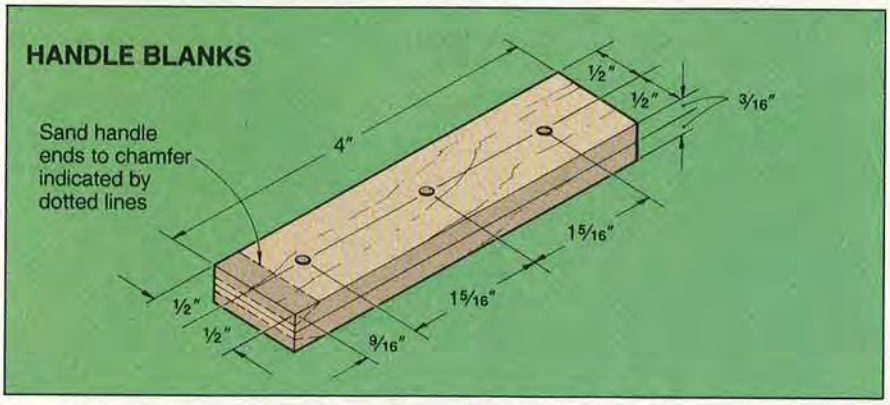
Lay out the hole locations where shown on the Handle Blanks drawing *right*. Tape the pieces into pairs with double-faced tape, and then drill ⅛" holes where marked with a brad-point bit in a drill press. Hold the handle blanks with a handscrew clamp. (We backed them with scrap to prevent tear-out.)

Slightly round the ends of the provided ⅛" brass pins with sandpaper to prevent tearout when you push them through the handle holes. Roughen the sides of the knife tang with coarse sandpaper. If you're putting on teak handles, as we did, remove the oil from the mating surfaces of the teak with acetone. Don't touch the surfaces after cleaning.

Glue the handle sides to the tang with slow-setting epoxy. Align the holes in the handle sides with the tang holes, and then tap the brass pins into place. Butt the handle pieces up to the tape on the tang, and then clamp.

After the epoxy sets, file the brass pins down to the handle surface. Sand the handle edges flush with the knife tang, using a belt sander. Round over the edges with a piloted ⅛" round-over bit in a table-mounted router or with 80-grit sandpaper.

Finish-sand the handles, and apply three coats of a clear oil finish, such as tung oil. Remove the blade sheaths, and then grill up some steak. When it's time to do the dishes, wipe the handles with a damp cloth, submersing only the blades—the finish will last longer that way. So will the epoxy holding on the handles.



Buying Guide

- **Blades.** Set of six knife blades with lifetime guarantee and ⅛" brass handle pins, $33.45 ppd. Easley Knives, P.O. Box 478, Gladbrook, IA 50635. Allow four weeks for delivery. For a roll-up suede storage pouch, add $15.
- **Handles.** Teak turning square, 1½×1½×18", $7.90 ppd. Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Or, call 800/223-8087 to order.

Design: Walt Easley
Photograph: Hopkins Associates
Illustrations: Jamie Downing; Jim Stevenson

Print this article

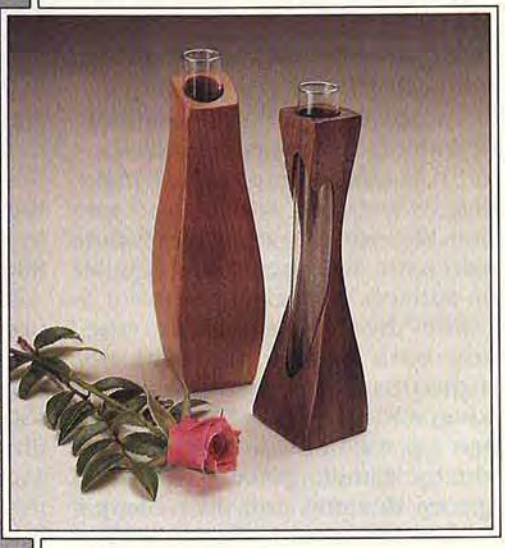
Elegant, yet easy

BUD VASES WITH FLAIR!

Eye-catching curves combine with glass tubes to make these bud vases striking accents for any spot in the home. They're just right for Christmas gifts, too. Follow our hints on designing your own versions to create some styles all your own.

For each large vase, start with a hardwood block about 2×2×5¾" and an 18×150mm test tube. Or, make a small one from 1×1×2¾" hardwood and a 12×75mm test tube. (We used turning squares for stock; see the Buying Guide, *opposite page,* for our test tube source.)

Draw diagonal lines on one end to locate and mark the center of your stock. Then, drill the test tube hole with a brad-point bit mounted in a drill press. For a large vase, bore a ¾" hole 5¼" deep (you also could use a spade bit). If you're making a small vase, drill a ½" hole 2⅝" deep.



Design: Don Bailey Photograph: Hopkins Associates Illustrations: Jamie Downing; Bill Zaun

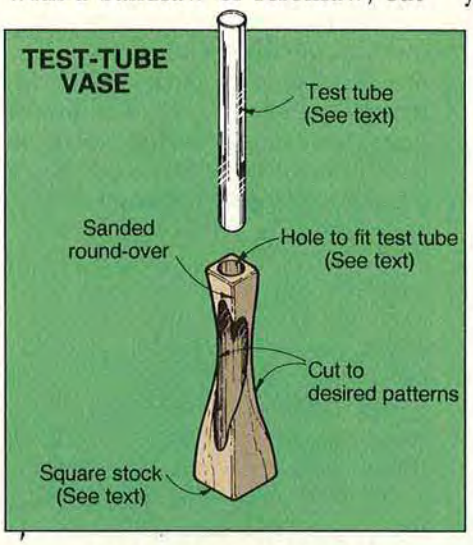
Hold the stock with a handscrew clamp as you drill. Now, trace the full-sized front and side vase patterns *below* onto your block, or create your own design.

For your own design, sketch flowing curves rather than straight lines. Draw a slanted top for a lighter look. For stability, make the base larger than the top. Draw your cutting line across the drilled-out part of the block to create glass windows in the sides. With a bandsaw or scrollsaw, cut along the front pattern lines, saving the side pieces you cut off. Put the sides back into place on the block and secure them with masking tape. Then, cut the side pattern lines.

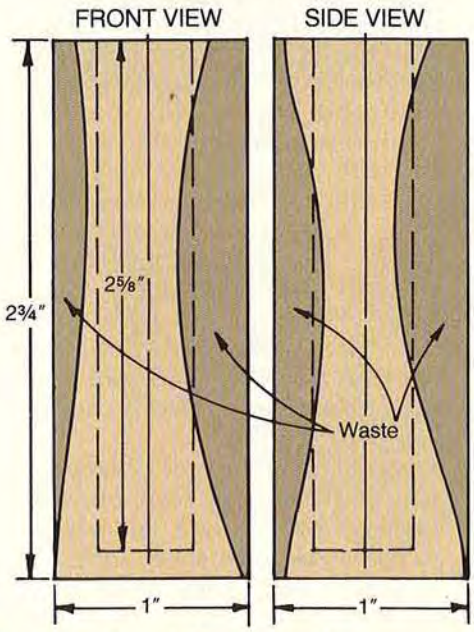
Round over the edges as you sand the vase with a sanding drum mounted in a drill press. Then, apply a clear oil finish. Slide the test tube into place. Now, just add flowers and water to bring a cheerful touch to any room in your home.

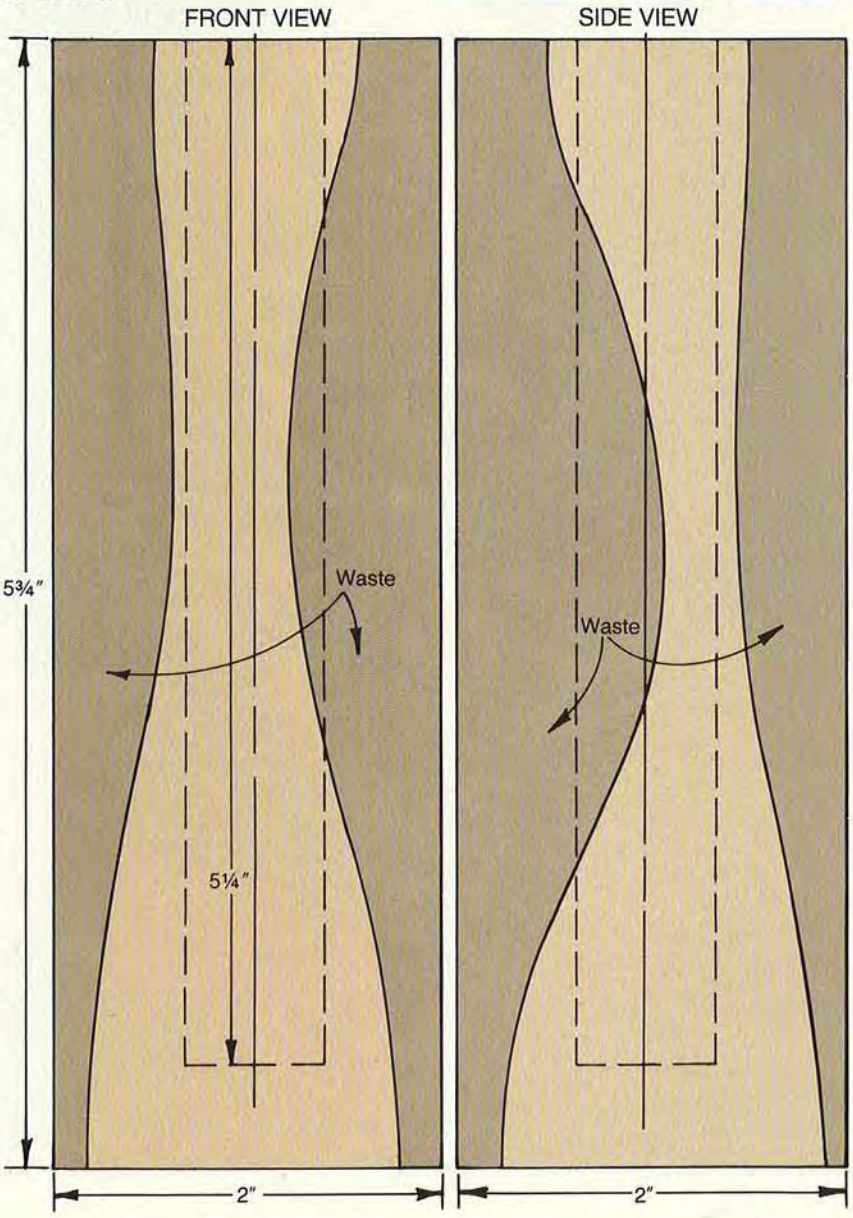
Buying guide

● **Test tubes.** Set of three large or six small glass test tubes, $5.98 per set postage paid in the U.S., from Ennis Mountain Woods, RFD 2, Box 222B, Afton, VA 22920. With each order, please enclose an index card or mailing label with your name and address typed or neatly printed on it.



FULL-SIZED PATTERNS





Print this article

ORNAMENTAL

Scrollsawers, don't pass up this chance for a change-of-pace project. You'll have fun trying your hand at cutting metal while you make these nifty necklaces.

When we saw these patterns for necklace ornaments, we decided to try something a little bit different: scrollsawing metal. Soft, nonferrous metals such as aluminum, brass, and copper cut nearly as easily as hardwood, and it's a chance to expand your horizons with a simple blade change.

Home centers, lumberyards, hobby shops, and craft stores sell suitable metals. (We bought a 4×10" piece of aluminum .064" thick—just over 1/16"—at a local hobby shop for less than $2.50. Brass the same size—but half as thick—cost about $1 more.)

For best results in thin metals, select a blade with at least 20 teeth per inch, preferably more. The more teeth per inch, the smoother the cut. Jewelers' metal-piercing blades work great, and they'll fit standard, clamp-type blade holders. A No. 9 metal-piercing blade (.049×.022" with 25 teeth per inch) did the job nicely. (Woodcraft sells this blade as catalog No. 15V34, and offers four other styles of jeweler's blades from 20 to 48 teeth per inch. For Woodcraft's Scroll and Fret Saw Replacement Blades catalog, call 800/535-4482.)

To begin the project, photocopy the full-sized pattern of your choice, *opposite page*, and stick it to the metal with spray adhesive. Cover the back of the metal with

METALS Necklaces from your scrollsaw

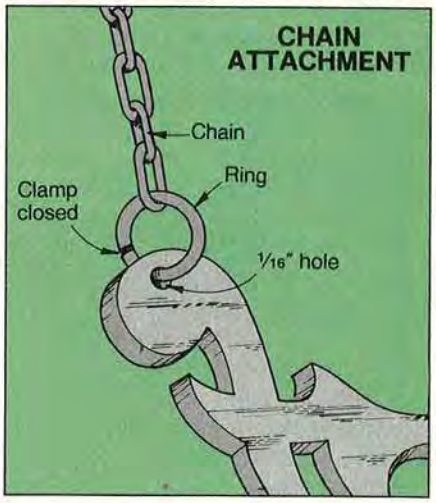
masking tape to prevent surface scratching. (We had better luck cutting the thin brass by attaching a piece of ⅛" plywood to the back with double-faced tape.)

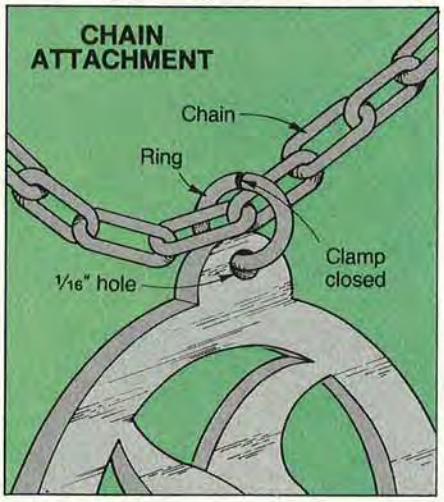
Drill 1/16" blade start holes (or a size to fit the blade you're using) and the 1/16" holes to attach the chain where indicated on the pattern. Now, cut out the ornament.

Work as you would with a thin piece of wood: start with small areas inside the pattern and finish with the outside line. Feed your workpiece slowly but steadily, as you would a thick piece of hardwood. Try a lower saw speed if you have a variable-speed machine. (A variable-speed saw isn't required; we cut our brass charm and aluminum necklace with a single-speed saw.)

Remove the pattern and masking tape, and block-sand both sides of your cut-out ornament with 600-grit sandpaper. For a satin finish, go over the metal with automotive rubbing compound. The aluminum came out looking like pewter after this treatment. Turn to jeweler's rouge and a buffing wheel for a high polish on the brass piece.

Hang the dove on your chain with a single ring. For the other necklace, cut a chain (a 24" costume jewelry chain works perfectly) at the center, and then attach half of the chain to each side of the ornament with a ring (see Chain Attachment drawings).





So, what's with the metal stuff?

No, this isn't a metalworking magazine. But, standard woodworking equipment can handle a variety of materials—plastics, light metals, and architectural materials such as Corian, for example. From time to time, we'll incorporate some of these into our projects so you can try something new and explore the versatility of your tools.

Design: Harlequin Crafts Photograph: Hopkins Associates Illustrations: Jamie Downing; Bill Zaun

YIPPY-YI-YO-HO-HO

IT'S

You say Santa Claus stays at the North Pole year-round? Wrong! Arizona woodcarver Dave Rushlo spotted Claus in his cowboy clothes down in Scottsdale not too long ago. (At least, he *thinks* it was Santa.) Anyhow, Dave picked up his trusty knife and gouges and carved the old gent's likeness. If you too would like to have Western Santa around your home this season, gather your tools and have yourself a jolly old time carving this character.

Tools and Supplies

Carving Stock

Basswood, jelutong, or other carving wood 3¼ × 2½ × 6″ for the body and 2½ × 2½ × 3¾″ for the head. Or, order a bandsawed basswood head and body, shown *left*. The two-piece set costs $24 ($43 for two) with guidelines drawn on, or $16 ($28 for two) without lines, both ppd. in the U.S., from: Dave Rushlo Woodcarvers Supply, 2530 N. 80th Pl., Scottsdale, AZ 85257.

- Suitable stock, ¾ × 7 × 9″ for base and 1½ × 3 × 4″ for bag.

Knife

- bench-type carving knife

Gouges

- ⅛″ and ½″ No. 3
- ¼″ and ½″ No. 9
- ⅛″ and 3/16″ No. 11

V-Tools

- ⅛″, 3/16″, and ¼″ No. 41

Woodburner

- fine-line tip
- 1/16″ circle tip

Finishing Materials

- No. 8 and No. 12 shader brushes
- No. 2 round brush
- No. 00 or No. 000 liner brush
- artist's colors, oil or acrylic: titanium white, zinc white, black, golden ochre, burnt umber, Indian red, flesh hue, cerulean blue, and gold. Walnut and maple stain. If you use oil paints, you'll need thinner.

Bandsaw your blanks, and draw the guidelines

Transfer the full-sized patterns for Santa's body and head on *page 79* to your carving blocks. Arrange the body patterns so the boot soles rest on the same plane.

Bandsaw the head and body blanks on the *yellow* lines, and then draw a vertical centerline around each as shown. Next, draw Santa's arms, legs, boots, belt, and suspenders on the body blank, as indicated by *pink* lines on the patterns. Referring to the Bottom View drawing, draw the boot soles on the bottom.

Now, trace the nose, mouth, and hat lines onto your head blank. Measure from the centerline to keep Santa symmetrical.

Print this article

WESTERN SANTA

Carve Santa's body first

Note: *Treat Santa as two separate carvings. First, rough out his body, and then carve the details.* Stop-cut the body pattern lines to begin carving Santa. Stop cuts, vertical knife cuts, enable you to carve to a line without chipping out the wood beyond it. As you form the body, leg, and arm contours with the ½" No. 3 and No. 9 gouges, make new stop cuts as needed. *Leave the suspenders alone, for now.*

Start the openings between the arms and the body by boring a hole with the ⅛" No. 11 gouge, twisting and pushing the tool. Begin the hole close to the body on the front, and angle it downward and inward as you bore through, coming out between Santa's back and arm. (See photo, *below.*)

Bore through with your No. 11 gouge between the arm and body.

Redraw the body centerline, and draw centerlines on the front and back of the boots, legs, and arms. Now, you're ready to start detailing Santa's body.

Detailing from the ground up

Let's start with those fancy boots Santa wears, shown in the opening photo. Cut the boot top, form the heels, and lay out the sole with a small V-tool. Now, shape the boot with your knife. Apply other details such as the pull straps, toe caps, and seams with the knife and small V-tool.

Next, carve the wrinkles and creases in Santa's jeans. Note in the photo how the fabric bunches up where he stuffs his jeans into his boots, and carve a slight rolled ridge around each boot top. Then, with a gouge or with rolling, sideways knife slices, carve folds and wrinkles on the ridge and legs. Add seams and front pockets with your V-tool.

Draw the rear pockets, belt, buckle, and belt loops with a pencil. Outline them with a small V-tool, and then carve. (Superdetailers note: Western Santa carries his chaw can in his right hip pocket.) When carving the belt, start with the buckle and belt loops; carve the belt last.

Upper-body exercises

Carve the arms, chest, and back to shape, enlarging the opening between Santa's arms and body. Refine the body contours, but leave the suspenders standing above the surface for now.

Shape a mitt on the end of each arm. Divide each mitt in half, and each half in half to form the fingers. Shorten the first and little fingers and carve them slightly lower than the two middle ones.

Carve each thumb up to the suspender, and then pare down the suspender at each hand so that it appears to go over the thumb and under the fingers (see photo, *above right*). Form the slightest hint of a thumb tip on the inside of each strap.

Draw fingernails with a pencil, and carve them, along with creases at the knuckles, with the small V-tool and knife. Santa wears a traditional red flannel garment with his jeans, so put a ribbed cuff at each wrist.

Roll the suspenders over Santa's thumbs, but don't hide his thumb tip.

Don't forget Santa's suspenders, whatever you do

You've pretty well finished Santa's body now, except for his suspenders. For those, you have a choice of two styles.

Undercut suspenders as shown in the photo, *next page,* really set off your carving. Before doing this type, though, reinforce them with cyanoacrylate adhesive (instant glue). Soak the wood with glue from shoulder to thumb, and let it dry for an hour.

Then, carefully dig out the wood under each strap from the thumb to the front of the shoulder. Cut a little bit at a time with your knife tip or small gouge.

For simpler suspenders, shave the wood to about 1/16" above the body surface. Straighten the edges with the small V-tool.

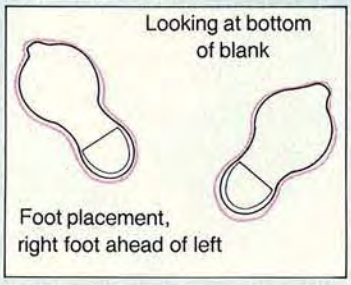
Continued

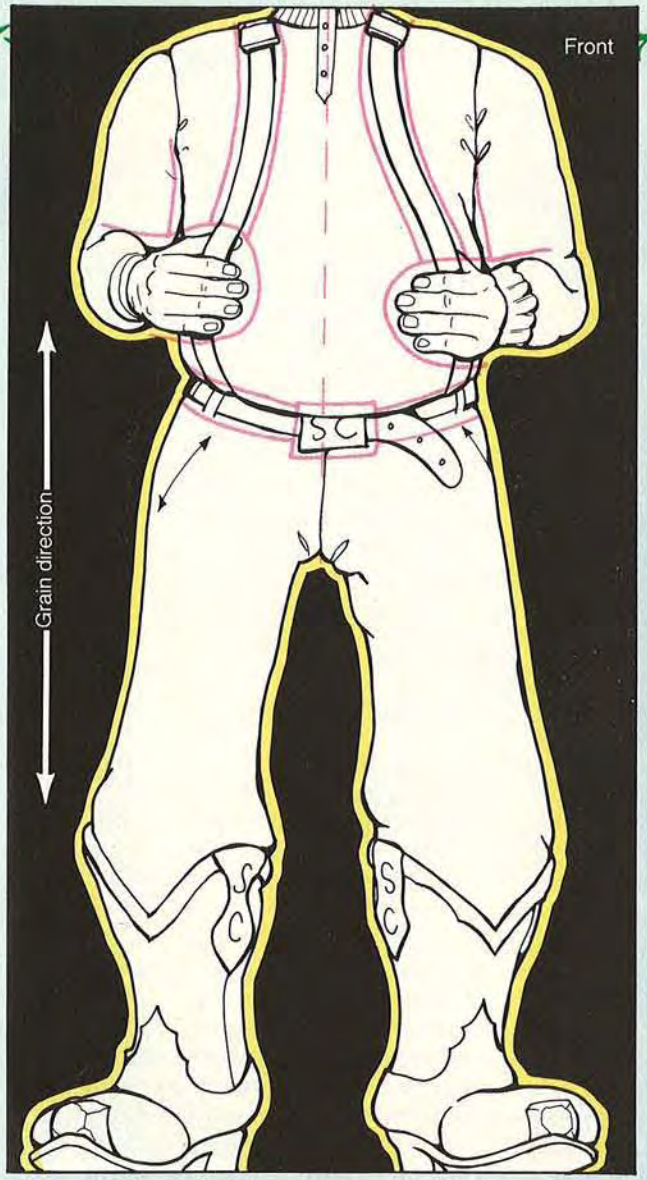
Completing the body

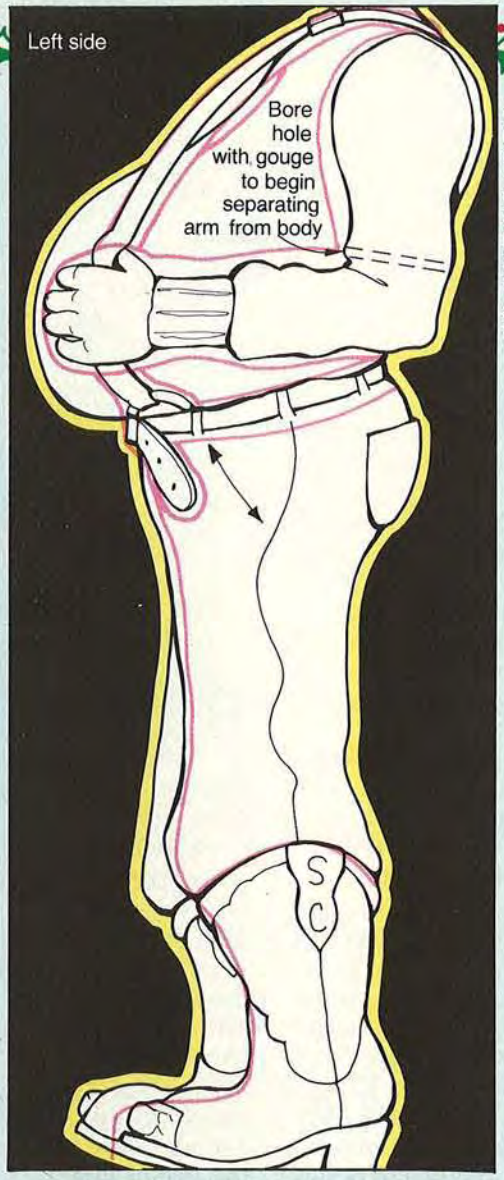
Now, draw a centered line across the shoulders on top of the body. With a gouge and knife, bore a ½" neck hole about 1" deep where that line intersects the body centerline.

Carve a ribbed collar around the hole and add a couple of buttons on a placket at the front. Woodburn the boot and jean stitching along with boot-top and belt-buckle monograms.

Continued

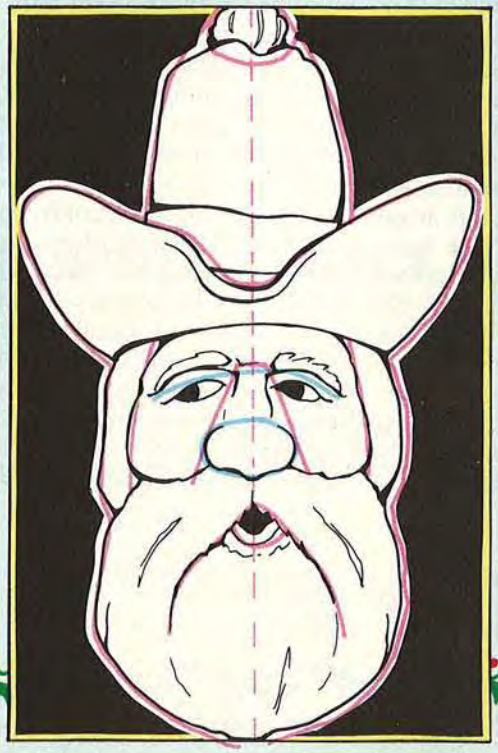






FULL-SIZED CARVING BLANK PATTERNS

Cut on Yellow lines to bandsaw carving blanks. Draw other lines as described in body of article.



Roughing Santa's head 'n' hat

Stop-cut the carving lines (*pink* lines on pattern) on the head with the ¼" V-tool, and then carve the side of the face, hair, and beard to rough shape with the No. 3 gouge. Leave about ¼" of extra material for the hair at the side of the face. Carve the neck peg to match the hole you made in Santa's body.

Remove side waste on the hat crown. Then, round the crown, using the front and back centerlines to maintain symmetry.

Lay out the brim on the top surface with the V-tool. Round the corners. Next, shave material from both sides with knife or gouges, forming a rolled brim about ⅛" thick. Carve the crown to shape, forming the creases.

Rough-in Santa's face

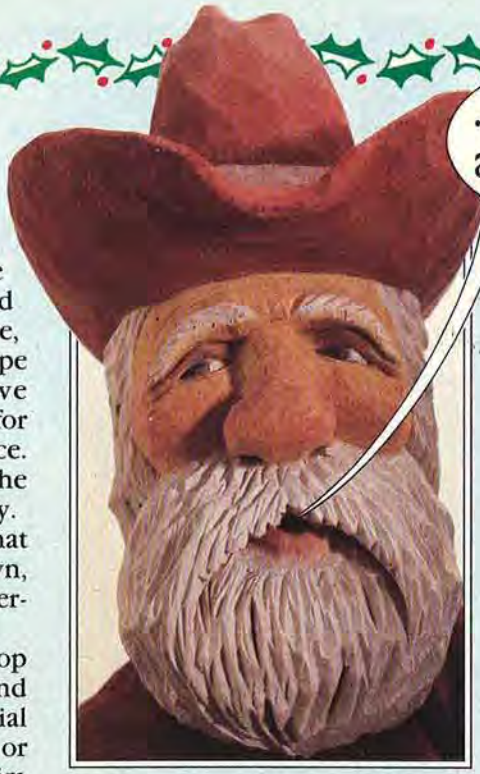
Refer to the head patterns, and draw the arcing line across the top of the nose, the circle at the end of the nose, and the contour on the side (*blue* pattern lines). Cut around the arcing line with the ¼" V-tool, and carve the upper part of the nose to the contour line with knife and gouges.

Carve about 3/16" deep beside the nose and under the arc, and then cut in the eye sockets under the arc. Shape a ball on the end of the nose, following the circle you drew. Separate Santa's beard and mustache around the mouth, and then carve his lower lip with an arcing No. 11 gouge cut up into his mustache.

Start detailing at the top

Carve the furry ball on Santa's hat (see photos, *page 78*) and then, smooth out the crown and brim. Add a hatband, laying it out with your V-tool.

Undercut the top edge of the hatband slightly with your knife to make it stand out. Cut around the line under Santa's hat with your V-tool to make a crisp separation between hat and head.



His eyes, how they twinkle!

Refer to the close-up photo of Santa's face, *above,* and then create eyebrows along the arcing line on each side of the nose with small V-tool cuts. Start Santa's eyes by drawing an arc in the top of each eye socket (for the fold in the upper lid) with another parallel arc about 1/16" lower (the eyelid itself). Draw the lower lid. Then, with a *sharp* V-tool, carve the fold line and the eyelid line.

Carve the eyeball with your knife, and then form the lower lid with your V-tool. Santa is getting on in years and he smiles a lot, so add some crow's-feet at the corners of his eyes.

Smooth the cheeks and nose, paring the bridge of the nose down to blend it into the face. Add nostrils and open up Santa's mouth with the ⅛" No. 11 gouge. Draw flowing lines for Santa's hair, mustache, and beard, and carve them with short, curving gouge cuts. Then, go back with large and small V-tools for texture, again making short, curving cuts.

Build Santa a platform

Make the base from a piece of ¾" basswood about 7×9". Round the corners, as shown in the photographs, with your bandsaw. Undercut the edges for added interest.

With your V-tool, cut parallel straight lines about ½" apart lengthwise on the base. Simulate planked cabin flooring with random V-tool crosscuts. Texture the surface with a gouge, and then Woodburn nailheads at the ends of each floorboard.

Carve Santa's bag from a 1½×3×4" block. Round the corners, and then represent rumpled fabric with deep V cuts. Add a gift list and a rope around the top. Stain the base walnut and the bag dark maple.

Paint your Santa

Painting is as important as the carving to the final effect. Thin the paints to a watery consistency—don't hide the character of your carving under heavy coats of paint. Build color by applying thin wash coats.

Santa's hair and beard and the ball on his hat get two coats of zinc white followed by two coats of titanium white. Paint the boots with golden ochre, and then add a coat of burnt umber on the bottom part. Trim the tops with Indian red.

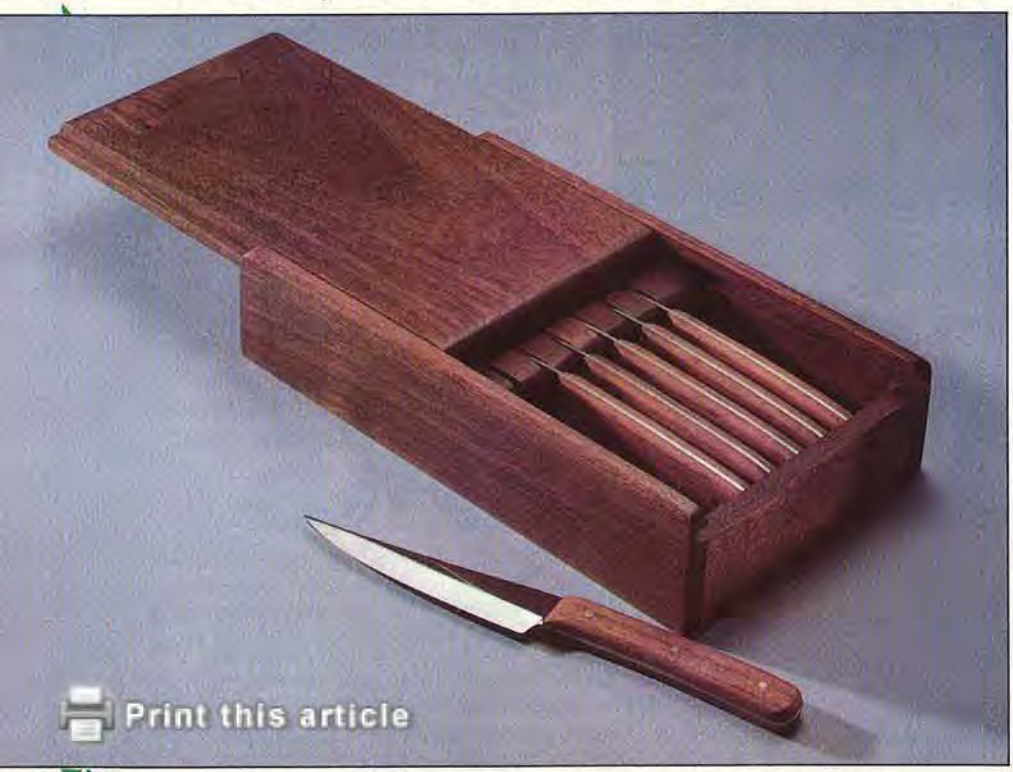
Prime with zinc white before painting Santa's pants with cerulean blue and his red flannel top with Indian red. Hands and face get two coats of flesh hue followed by a coat of golden ochre.

After the paint dries, mount Santa and his bag on the base with 1¼" wood screws. Drill pilot holes, and then drive one screw into each of Santa's heels and one into the center of the bag from underneath the base. Countersink the screws. Finally, sign and date your masterpiece on the bottom of the base.

Written by Larry Johnston with Dave Rushlo
Design: Dave Rushlo
Photographs: Hopkins Associates
Illustrations: Mike Henry

WELL-ORDERED

SAFE, STYLISH STORAGE FOR YOUR STEAK KNIVES



The Walt Easley steak knives featured in The Craft Shop on *page 70* make the perfect gift for so many occasions that we decided to build a fitting presentation box for them. In addition to its practical slotted interior for safe storage, our walnut box also features a slick sliding lid for easy access to those great knives.

***Note:** We built the knife box from ¾", ½", and ⅜" walnut. Plane or resaw thicker stock for the ½" and ⅜" material.*

Rip and crosscut a piece of ⅜"-thick walnut to 2×36". With a ¼" spiral mortise bit or straight bit in your table-mounted router, cut a groove ¼" deep ¼" from one edge on one side of the stock.

Cut two pieces 9¼" long from the grooved stock for the box sides (A). Rip the remainder of the piece to 1½" wide, cutting off the edge opposite the groove. Cut two 4¾" lengths from the piece for the box ends (B).

Cut the box bottom (C) to ⅜×4¾×8⅞", and then adjust the table-mounted router to cut a ¼" rabbet ⅛" deep across each end. Make a test cut first to ensure that the rabbet fits the part B grooves.

Dry-assemble the ends (B) to the bottom (C), with the rabbeted side down (see the Box Assembly drawing). Glue on the sides (A), with the groove to the top and inside, applying woodworker's glue to the edges of the ends and bottom. Make sure that the ends are square to the base.

Cut ½"-thick stock to 5⅜16×9¼" for the box lid (D). Rout a ¼" rabbet ¼" deep along both top edges of the lid. Slide the lid into the grooves on the sides, and then sand all outside surfaces flush.

Change the router bit to a ¼" round-over bit, and rout along the top edges of the box with the lid in place. Sand smooth, and then remove the lid.

Cut parts E, F, G, and H to the sizes shown on the Bill of Materials. Glue part G into position. With a disc or belt sander, sand a round-over on one corner of each part E and F. Cut the 9⁄16" radius where shown with a bandsaw or scrollsaw, and then sand smooth with a 1"-diameter drum sander in a drill press.

Cut six ⅛×1×6" spacers from scrapwood. Now, glue a part E at one side of the box with the round cutout at the end nearest part G. Next, place a ⅛" spacer *but do not glue it in,* and then glue in a part F. Continue adding spacers and part F blocks, ending with the remaining part E. Sand part E to fit, if necessary.

Finish as desired. (We used Watco Dark Walnut Stain followed by three coats of natural Watco Danish Oil Finish.)

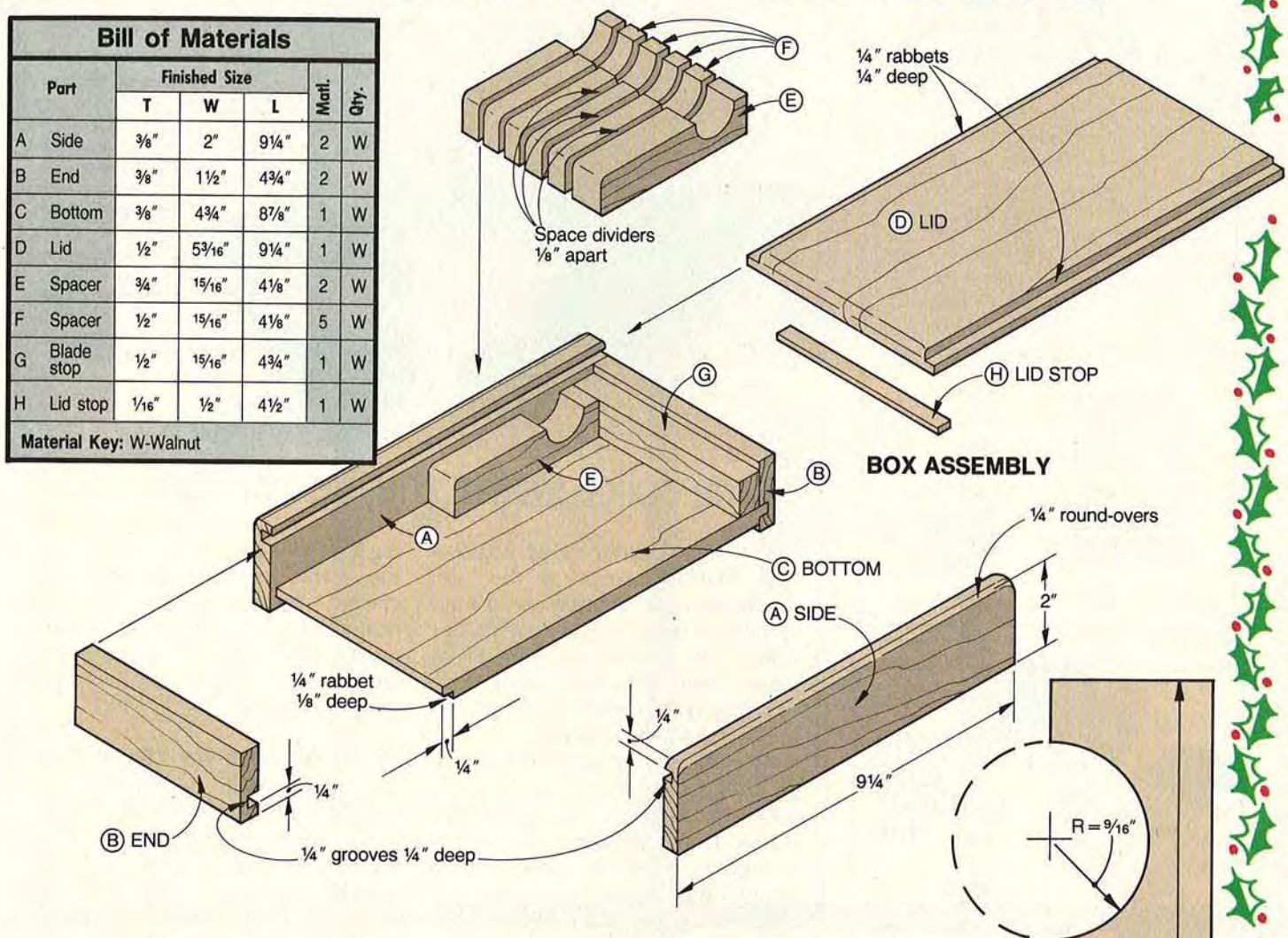
To apply the lid stop (H), sand an area on the underside of the lid where shown on the Gluing the Lid Stop drawing. Slide the lid into place, leaving it partially open so you can reach the sanded area. Apply a small amount of epoxy to the stop and, with the box upside down, center the stop about ¼" from the inside edge of the lid. Now, gently slide the lid closed to push the stop into position. Make sure that the lid is flush, and let the epoxy cure.

Project Design: Jim Boelling
Illustrations: Kim Downing; Mike Henry
Photograph: Hopkins Associates

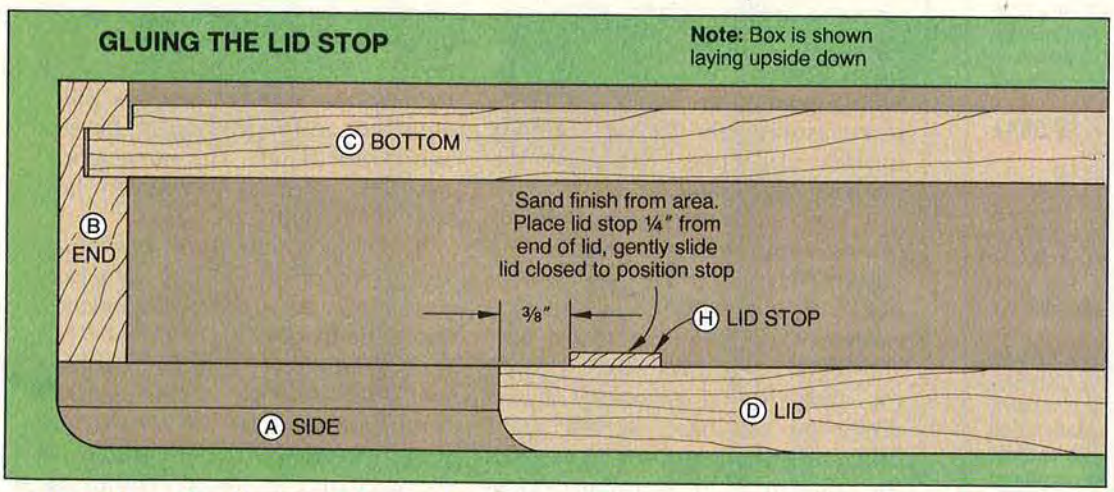
CUTLERY CASE

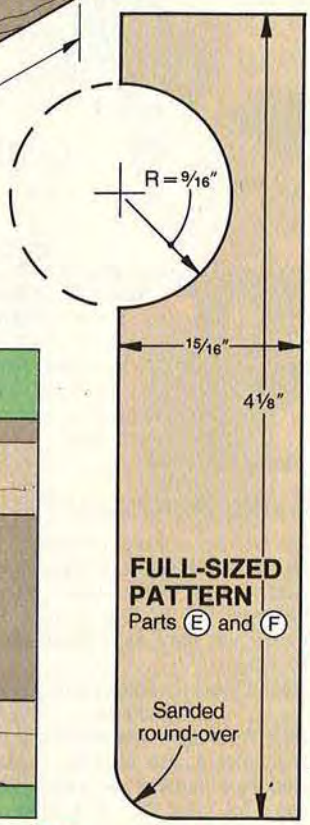
Bill of Materials						
	Part	Finished Size			Matl.	Qty.
		T	W	L		
A	Side	3/8"	2"	9 1/4"	2	W
B	End	3/8"	1 1/2"	4 3/4"	2	W
C	Bottom	3/8"	4 3/4"	8 7/8"	1	W
D	Lid	1/2"	5 3/16"	9 1/4"	1	W
E	Spacer	3/4"	15/16"	4 1/8"	2	W
F	Spacer	1/2"	15/16"	4 1/8"	5	W
G	Blade stop	1/2"	15/16"	4 3/4"	1	W
H	Lid stop	1/16"	1/2"	4 1/2"	1	W

Material Key: W-Walnut



BOX ASSEMBLY


GLUING THE LID STOP
Note: Box is shown laying upside down
C BOTTOM
B END
Sand finish from area. Place lid stop 1/4" from end of lid, gently slide lid closed to position stop
3/8"
H LID STOP
A SIDE
D LID



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BEDROCK BENCH PLANES

Three later-style Bedrock planes, recognizable by their squared-off sides: *top left,* No. 605C, worth about $65; *bottom left,* No. 604¼ worth about $250; and *right,* No. 603C, worth about $150.

Some folks swear they're the best ever

Ask any builder or geologist—bedrock ranks as the ultimate in stability. So it's no wonder that in 1900, when Stanley Rule and Level Co. introduced planes that held the plane iron (cutter) rock steady, the company dubbed them "Bedrock."

At the heart of the new tool sat an improved *frog,* patented in 1895 by Stanley's head engineer, Justus Traut. The frog—a roughly triangular cast-iron piece upon which the cutter rests—secures that iron to the plane bottom. The Bedrock and frog evolved from Stanley's Bailey bench plane, the standard for nearly 40 years. Traut's patent made the frog even more triangular and mated it more stubbornly to the bottom, while allowing easy throat-opening adjustment.

A later improvement in Bedrock planes came in 1910, when Edmund Schade, then superintendent of production at Stanley, patented a system of draw pins and tapered screws that allowed the frog to be securely drawn down on the base. At the same time, this improvement permitted the adjustment of the throat opening without the need to remove the plane iron. Along with this change, Stanley altered the side profile of the planes to the square or flat-sided type shown *above,* a change that lasted until Stanley discontinued the line in 1943.

More support for the cutter

The improved Bedrocks supported the plane iron right to the heel of its bevel, eliminating movement and chatter so completely that some folks proclaim them the finest planes ever made. Bedrock planes cost slightly more than the Bailey planes, and come in corresponding sizes 2-8. The prefix "60" identified the Bedrocks. So a No. 608 Bedrock plane equalled a Bailey No. 8 in size and cutter width. The same model Bedrock, with a corrugated bottom, is No. 608C.

Today, collectors and craftsmen seek Bedrocks, which generally cost more than the Bailey planes. Some Bedrocks, like the rare No. 602C and the No. 605¼, can sell for $500-$1,000. While collectors want them for the relative rarity, craftsmen still crave them for clean, chatter-free hand-planing.

Written with Philip J. Whitby Photograph: Tim Murphy

FRONT AND CENTER: WOOD READERS WHO MAKE A DIFFERENCE

Name: Build-A-Toy™ contest entrants
Age: From teen to grandparent
Home: The U.S. and Canada
Family: Small and large
Occupation: Woodworkers
***WOOD*® connection:** Readers all

In this our holiday issue, we're saluting the more than 400 readers who entered our 1991 Build-A-Toy contest. Their time and effort will benefit hundreds of children just like the ones shown *right*.

Right now, in fact, those special handmade toys are in the care of the U.S. Marine Corps Reserve. Through their Toys-for-Tots program, the marines will distribute them to needy children across the nation, just in time for Christmas.

If you recall the list of winners and prizes we published in the October issue of *WOOD* magazine, you'll have noted that toymaking can be rewarding. But even those who went prizeless were rewarded, knowing that their toys will light up the hearts and eyes of needy children. Participating woodworkers, take a bow!

Inner-city children leave New York's Museum of American Folk Art last December 11 following an afternoon of ice cream and games at the Crafted for Joy exhibition of wooden toys. The exhibit featured selected entries from *WOOD* magazine's Build-A-Toy Contest. Editor Larry Clayton, *rear left*, and Publisher Bill Reed, wave so-long from the museum's entrance.

Do you know a subscriber who makes a difference? Send details to: Front and Center, *WOOD* magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

PACIFIC YEW FIGHTS CANCER

As timber, the yew tree of the Pacific Northwest has little commercial value, at least in comparison to the Douglas fir with which it grows. But, recent research may give the yew its due.

Medical researchers at Baltimore's John Hopkins University discovered that a substance called taxol, found in the yew's bark, reduced the size of malignant ovarian tumors by half or more in about one-third of the women they tested. Scientists at the National Cancer Institute claim that taxol also may aid the treatment of skin and breast cancers.

COOL POCKET CHANGE

The U.S. Forest Service estimates that the trees growing within the boundaries of U.S. cities and towns save Americans at least $2 billion in air-conditioning costs each year. This sum exceeds the government's gross annual timber receipts from our national forests!

WOULD YOU BELIEVE "WOOD MINING"?

During the 1700s, most of the young nation's shingle material came from the New Jersey cedar swamps. But the demand grew so great for the light, easily split white cedar that the swamplands were depleted of their standing trees by the early 1800s. Then, the cedar was actually *mined!*

According to the late Eric Sloane, writing in *A Reverence for Wood* (Ballantine Books, New York, 1956), sunken logs of whole trees were probed for through the mud with long, iron "progue pins." Once found, the submerged log was then hoisted to the surface with block and tackle, dried, then rived into shingle slabs. The wood proved exceptionally light and durable, and the mining prospered until the Civil War. The roof of Philadelphia's Independence Hall was originally made of this material.

Photograph: Sondy Daggett Illustrations: Jim Stevenson

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